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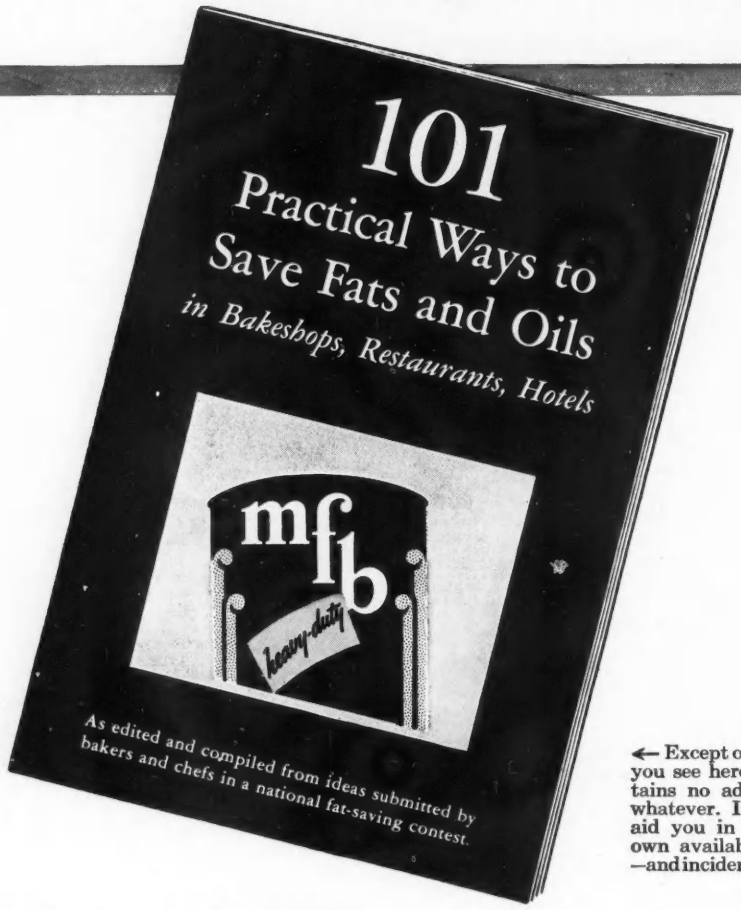
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Trends in Vitamin Research[1]

HOWARD B. LEWIS, Ph.D.

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IT IS the purpose of this discussion to consider recent trends in the study of the vitamins, to indicate progress which has been made, and to suggest lines along which important developments may be anticipated in the near future. It was at first proposed to title this paper "Vitamins After Thirty Years," to emphasize the fact that thirty years have elapsed since Casimir Funk, in June 1912, in a paper entitled "The Etiology of Deficiency Diseases"[2] introduced the term, *vitamine*, to workers in the biological sciences.

I am not and have never been an investigator in this field. My excuse for such a presentation at this time must be a lively interest in this problem on the part of one who during his scientific lifetime has seen the development of this concept. From the suggestion of Eijkman in 1897 that continuous consumption of decorticated (polished) rice was the chief contributing factor in the etiology of beriberi to the vitamin hypothesis of today, is a far cry. Mine is the viewpoint of one who as a teacher of biochemistry for some thirty years has had the obligation to sift the evidence, often contradictory, and to present objectively the status of the vitamins to students of medicine and biology. This is the viewpoint of one who in the words of a popular song of the "Gay Nineties" stands "outside lookin' in" at the vitamin theory, rather than that of a research worker in this field. It has seemed to me desirable to indicate briefly the lines of attack which have been successful in the advancement of our knowledge of the vitamins to the point where many substances have been characterized as vitamins, their structure clearly defined, and their widely divergent functions and activities studied.

A primary requirement for progress in the study of vitamins has been the successful experimental production of the deficiency disease in laboratory animals. With such a procedure available, it has been possible to study the occurrence and distribution of vitamins in natural foodstuffs by the use of biological assays based upon effectiveness in the prevention or cure of the associated deficiency disease. The classification of foods as rich, good, or poor sources of vitamins was thus assured. Such classifications were of necessity crude, since the importance of exact standardization of experimental procedure was not realized. Ultimately, more uniform methods of assay were adopted and units of vitamin content which permitted comparison of results from different laboratories were agreed upon. The basis of these units was, however, a biological one; the unit was defined in terms of animal behavior (growth response, curative or preventive effect) and no absolute evaluation of the various units was possible.

If the vitamin theory was to be placed upon a scientific basis, more exact chemical knowledge of the nature and properties of vitamins was necessary. The studies of the distribution of vitamins in nature had shown in many instances foodstuffs unusually rich in their vitamin content and thus suggested materials from which success in the isolation of the vitamin might be anticipated. Valuable information as to probable chemical properties was provided by investigations of the stability of the vitamins, particularly towards heat and oxidation. The next steps, the isolation of the pure vitamin, the determination of the chemical structure, and the laboratory synthesis of the vitamin, have now been achieved.

With knowledge of the chemical nature of the vitamin, chemical assays have in many cases replaced the slow and difficult methods of biological assay. No longer is a vitamin unit defined exclusively in terms of animal behavior, but in absolute terms, *i.e.* the content of a specific chemical substance. With such methods available, it has been possible to assay materials which did not readily lend themselves to the methods of biological assay. The vitamin content of blood, urine, and tissues, the storage and excretion under certain physiological and pathological conditions, and the relation of the supply of vitamins in the diet to the maintenance of the vitamin balance may now be determined rapidly and conveniently, in many instances. If the methods of chemical analysis prove to be as specific as is expected, detailed knowledge of the vitamin economy of the organism should be possible, knowledge as exact as that now obtainable for such chemical elements as chlorine or iron. However, until such a specificity of the methods of chemical assay is conclusively demonstrated, recourse must still be had to biological tests in order to

[1] Based on an address before the American Dietetic Association, Detroit, October 20, 1942. Received for publication February 15, 1943.

[2] In view of the large number of books, monographs, and review articles relating to the vitamins, literature citations have been limited.

check the chemical tests and to avoid any misinterpretation of the latter.

With the clarification of the problem of the chemistry of the vitamins, the investigations now turn again to the biological aspects. What are the functions of the vitamins? What is the basis, chemical and physiological, for the function of each? How are these functions altered in disease? Why does a group of atoms, combined in a definite molecular structure, manifest such a highly specific physiological activity? To what extent will modification of this chemical structure alter the physiological activity? Will it be possible, by the methods of synthetic organic chemistry, to obtain compounds superior in activity to the naturally occurring substances? These are unsolved problems. They represent one phase of a broader problem—the relation of chemical constitution to physiological action.

THE DISCOVERY OF ASCORBIC ACID AND NIACIN

In 1910, when I entered the laboratory of Professor Lafayette B. Mendel of Yale as a student of physiological chemistry, the term, vitamine, had not yet been suggested. Almost the first paper assigned to me in the seminar conducted by Mendel was the stimulating research by Axel Holst and Theodor Frölich of the University of Christiania, which had just appeared in the *Journal of Hygiene* for October 1907, namely, "Experimental studies relating to ship beri-beri and scurvy. II. On the etiology of scurvy." This paper, published almost exactly thirty-five years ago, opened up for the first time an experimental approach to the investigation of the disease in which the importance of unknown dietary factors (associated with fresh food) was probably recognized first. A quarter of a century later, the first pure crystalline vitamin, ascorbic acid, associated with the cure of scurvy, was isolated, identified chemically, and synthesized by the organic chemist.

For many centuries scurvy had been correctly recognized as a disease due to improper diet. It was well known, especially among sailors, that outbreaks of scurvy were frequent after deprivation of fresh foods for long periods of time and that prevention was possible and rapid cure effected when ample supplies of fresh vegetables and fruits were available. Notwithstanding this recognition of the relation of scurvy to diet, the nature and properties of the antiscorbutic substances in fresh food were unknown. In 1907, Holst and Frölich showed that scurvy could be produced at will in young guinea-pigs by feeding a diet consisting of grains exclusively, and that experimental scurvy, thus produced, could be promptly cured by juices of the citrus fruits. A means of study of the occurrence and distribution of the antiscorbutic dietary principle was thus at hand. It was soon recognized that the vitamin, designated in the alphabetical nomenclature as water-soluble C, was not stable and was easily destroyed by heat, and that this destruction was greatly accelerated in an alkaline reaction and in the presence of oxygen or air. This suggested that the vitamin was a strong reducing substance, readily oxidized, particularly in the presence of alkali. In investigations at the Lister Institute, London, it was noted that in the concentration of lemon juice the increases in the reducing power were parallel to the increases in the antiscorbutic potency. This was followed by the isolation in crystalline form of the vitamin from lemon juice, adrenals, and paprika. This was the first vitamin to be obtained in crystalline form and less than a year later the structure of the vitamin, which Szent-Györgyi named ascorbic acid, was known and its synthesis in the laboratory had been successfully achieved. As had been predicted from the behavior of the vitamin in plant juices, ascorbic acid was found to be a strong reducing agent which when converted by oxidizing agents to an oxidation product suffered a loss of antiscorbutic properties.

It was now possible to seek a chemical method of assay to replace or supplement the biological assay (production or cure of scurvy in young guinea-pigs). Ascorbic acid readily reduces certain reversible dyes of high oxidation potential (notably *p*-dichlorophenolindophenol), thus the vitamin C content of a plant or animal tissue may be determined by titration with the dye. While the method is not absolutely specific, parallel assays by chemical and biological methods have demonstrated its value.

By the use of this chemical method, the ascorbic acid content of urine, blood, and animal tissues, materials which are unsuited for biological assay, may be determined. This procedure may also be applied histochemically. Histochemistry, developed in the Carlsberg laboratories in Denmark, whereby analyses of microtome sections of tissue are possible, has been employed with certain animal tissues (*e.g.* adrenals, pituitary) by Glick. The concentrations of ascorbic acid in the various regions of the glands, the relative numbers of cells in the sections, and the vitamin content per cell, have been estimated. The contrast between the data of 1919, in which the vitamin C content of the foodstuffs was characterized by such approximations as 0 to ++++, and those of 1939 in which the content of ascorbic acid *per cell* in various zones of organs is stated in chemical terms, is convincing evidence of the progress in vitamin study.

It must be remembered that not until 1919 was the concept of scurvy as a specific vitamin deficiency disease generally accepted. The existence of subacute vitamin deficiency is now generally recognized and the importance of tests which would permit prompt recognition of these states of suboptimal nutrition is obvious. Studies of urinary excretion of vitamin C have indicated marked individual variations and have suggested that the degree of saturation of the tissues with ascorbic acid is an important factor in determining urinary excretion. The ascorbic acid content of the blood and urine may be abnormally low when the intake of ascorbic acid is significantly less than the normal requirements. As the intake is increased and a state of tissue saturation approached, the urinary excretion progressively increases until, at saturation, an abrupt rise in the ascorbic acid of the urine is noted. The amount of dietary ascorbic acid necessary to induce saturation appears to be an index of the vitamin C nutrition of the individual. While all

workers are not in entire agreement as to the details, such tests appear to be of real value in the study of nutrition.

The history of the development of our knowledge of other vitamins is similar. The initial approach has been made possible in almost every case because a deficiency in the diet of a laboratory animal could be produced—a deficiency manifested by failure of growth or by some specific pathology. A notable example was the failure to associate pellagra definitely with a vitamin deficiency. Not until a condition analogous to the human disease was discovered (canine blacktongue) was it possible to assay with accuracy any probable curative factors. With the utilization of dogs fed deficient diets, the progress was amazingly rapid, and the recognition of niacin (nicotinic acid) as a dietary factor in the B complex was as unexpected as it was prompt. It is of interest to recall that Funk had isolated nicotinic acid from rice polishings in 1913 (as had also Suzuki and his co-workers in 1912). The compound when tested on the biologically available test animal of that period, the polyneuritic fowl, was found wanting. It remained for later workers to whom better knowledge of the other factors of the B complex was available to test it on another species (dog) and in another deficiency condition, blacktongue, and to bring Funk's acid into the group of vitamins. Despite his failure to secure positive results, it is notable that Funk stated in 1914 that it was extremely probable that nicotinic acid was closely related to the vitamin (*"als sehr wahrscheinlich erscheinen, dass die Nicotinsäure in sehr engen Beziehungen zu dem Vitamin steht."* Die Vitamine [Wiesbaden] 35, 1914.)

It is obviously not possible to discuss within the limits of this presentation the other vitamin factors in as much detail as has been the case with ascorbic acid. However, it is possible to consider certain general developments which seem important.

WHAT IS A VITAMIN?

Significant in the vitamin hypothesis of today is the ever-increasing number of factors to which vitamin-like function is ascribed. In 1919, the Medical Research Council of Great Britain published (Report 38) a "Report on the Present State of Knowledge Concerning Accessory Food Factors (Vitamins)." The recognized factors listed in this report, a classic, although now, of course, obsolete, are presented in Table 1. Little comment is necessary. No longer is a simple alphabetical nomenclature possible. The "water-soluble B growth factor of the Americans" has now been subject to such subdivision that the more comprehensive term B complex is entirely inadequate. It may be of some interest to recall that one of the first suggestions that the antineuritic factor for birds and the water-soluble B for rats were "not the same and that it would be better to consider them as being different until there is further proof to the contrary" was made in 1919–20 on the basis of experimental work done in Detroit by Emmett and Luros in the laboratories of Parke, Davis and Co. (J. Biol. Chem. 43: 265, 1920). The B group now includes at least five substances of well-established chemical structure which are probably related to human nutrition (thiamin, riboflavin, niacin, pantothenic acid, and pyridoxine); and the existence of several more has been postulated.[3]

The concept of the fat-soluble growth factor of 1919 has also undergone radical revision. "A" was subdivided into A and D. The present A is not a unit. Several factors which possess D or antirachitic activity are known. In addition, new fat-soluble factors, the E and K group, are recognized. Of the 1919 group, only the last, the antiscorbutic factor, remains an unchallenged entity.

The tendency to multiply vitamin factors raises the problem, what is a vitamin? How far are we justified in adding new substances to the present list of known vitamins? This is a question which cannot be answered. It appears to the writer that the term should not be extended, but rather restricted. Vitamins might well be limited to those known and to new substances which function similarly to these. If a new factor is a simple compound with a known function in metabolism it would seem unnecessary to class it as a vitamin. Choline, a compound of simple structure, is a case in point. Its function seems to be to serve as a source of methyl groups in the body, and to participate in the metabolism of fat through the synthesis of the phospholipid, lecithin. Choline is essential for the synthesis of the sulfur-containing amino acid, methionine, if homocystine but not methionine is present in the diet. It is undoubtedly a factor essential for life, but why complicate the present vitamin picture by including it among the vitamins?

TABLE 1

Classification authorized by the Committee on Accessory Food Factors, Medical Research Committee of Great Britain (1919)

1. Anti-neuritic or anti-beri-beri factor (water-soluble B growth factor of the Americans).
2. The fat-soluble A growth factor or anti-rachitic factor, necessary to promote growth and prevent rickets in young animals.
3. Anti-scorbutic factor.

Rose was not able to obtain normal growth in young white rats when he substituted a mixture of the known amino acids for the protein of the diet. When 5 per cent of the total nitrogen of the diet was supplied by a casein hydrolysate and the remaining 95 per cent by the pure amino acids, growth was obtained. Did he conclude that casein hydrolysates contained a new vitamin? Rather he persevered until he obtained a new amino acid, threonine, the last of the amino acids to be proved essential for growth. Threonine is essential for normal function, why is it not a vitamin? Why are not all the

[3] Since the presentation of this paper, du Vigneaud has demonstrated the chemical structure of biotin, presumably one of the components of the B complex group of vitamins (Science 96: 455, 1942), and the synthesis of biotin has been achieved (Science 97: 447, 1943).

essential amino acids classified as vitamins? Choline participates in protein and fat metabolism in a manner which is probably more clearly defined than is the function of the majority of the amino acids.

To repeat, the writer would plead for a simplification of the list of vitamins rather than for its extension. The term, vitamin, has become a catchword and it is improbable that it will be eliminated from our scientific or popular vocabulary. At least let us keep the vitamins within bounds and exercise caution in accepting new factors. Rosenberg,[4] in his recent book, has suggested a new designation, "vitagen," for such substances as choline, the essential fatty acids, and the essential amino acids. Whether such a term can survive, time alone can determine.

Another problem is the place in our vitamin classification of factors shown to be essential for lower forms of life, particularly yeasts, molds, and bacteria. Until their role in the metabolism of vertebrates is clearly defined, they should not be classified as vitamins. The confusion which arose and still exists in the terminology of hormones as applied to plants certainly justifies a conservative attitude toward a factor whose only known function relates to the nutrition of plants. We need an acceptable definition of a vitamin. That suggested by Rosenberg[4] will undoubtedly be subject to revision: "Vitamins are organic compounds which are required for the normal growth and maintenance of life of animals, including man, who, as a rule, are unable to synthesize these compounds by anabolic processes that are independent of environment other than air, and which compounds are effective in small amounts, do not furnish energy, and are not utilized as building units for the structure of the organism, but are essential for the transformation of energy and for the regulation of the metabolism of structural units." Probably no simple definition can be suggested which will be entirely acceptable. The term "chemical regulator" as applied to this group may be useful. The characterization of the hormones as "chemical messengers" (Bayliss and Starling) or as chemical regulators, *i.e.* definite chemical factors for the integration of the reactions of the various organs and tissues, has long been accepted. It seems probable that in the near future vitamins may well be characterized as chemical regulators of *exogenous* origin, in contrast to the hormones, chemical regulators of *endogenous* origin. Thus the higher forms have the power to synthesize the hormones—thyroxine, insulin, or the various sex sterones—with relative ease from precursors, at present not definitely known but presumably of lesser complexity. The vitamins or exogenous chemical regulators, on the other hand, must be made available to the higher organisms as such or in the form of closely related precursors, *i.e.* the provitamins. The fact that a supply of certain preformed vitamins or precursors in the diet is not essential for some species is recognized, but its explanation is not clear.

[4] Rosenberg, H. R.: Chemistry and Physiology of the Vitamins. New York: Interscience Publishers, Inc., 215 Fourth Ave., 1942.

VITAMIN ASSAYS

As already pointed out, the earliest approach to the estimation of the amount of vitamin present in foods was a biological one, the determination of the relative amounts of different foodstuffs which would prevent or cure the deficiency state associated with the vitamin factor under consideration. Since the discovery of the chemical nature of many of the vitamins, other procedures have been developed. In Table 2 are summarized some of these with a few typical illustrations. Salter (New Eng. J. Med. 226: 649, 688, 1942) has presented an excellent critical summary of the best established chemical methods for the determination of certain vitamins and a discussion of their usefulness in the evaluation of the nutritional status of the human patient. Further improvement of analytical methods should also make possible more accurate studies of the loss in nutritive values of food in processing, preparation, and serving. Howe, whose responsibility is the quality and quantity of the diet of the armed forces in the present war, has presented forcefully this problem, equally important for the welfare of our civilian population. "If there are to be improvements in today's rations, they will come largely through the realization

TABLE 2
Procedures for vitamin assay

1. *Biological:* Growth, preventive or curative (rats, guinea-pigs, pigeons, chicks, dogs).
2. *Chemical: e.g.* $SbCl_3$ (A); thiochrome (B_1); indophenol (C), etc.
3. *Physical: e.g.* spectrophotometry (A); fluorometry (B_2)
4. *Microbiological: e.g.* growth of yeasts and various types of bacteria, notably Lactobacilli.

that while a good ration may be planned and issued, improper preparation, oversoaking, overcooking, and long standing before service may destroy nutritive values and thus nullify an otherwise good diet" (J. A. M. A. 120: 93, 1942). Chemical assay of ascorbic acid has made possible the discovery of important and unexpected new sources of this vitamin in Great Britain, as for example, rose hips (Pyke, M., and Melville, R.: Biochem. J. 36: 336, 1942) and parsley (Morgan, E. J.: Nature 150: 92, 1942).

Studies of the excretion of the vitamins are still confined largely to the water-soluble group. Our knowledge of the fate of the fat-soluble vitamins is still obscure. If their paths of metabolism are similar to those of the water-soluble vitamins, balance and saturation studies should be important in evaluating the nutritional status of individuals and groups. Such appraisal must await improvements in the methods of determination of the vitamins or their breakdown products in biological material, particularly the urine.

FUNCTION OF THE VITAMINS

The exact role of the vitamins in metabolism is unknown, and their mode of action not clear. It is not possible to generalize since each vitamin presents an

individual problem. Ascorbic acid is characterized by its capacity for reversible oxidation and reduction, which suggests that it may serve as a transporter of hydrogen in cellular respiration. A number of the factors of the B complex are components of enzyme systems, which are active in catalyzing the reactions associated with the catabolism of the proteins, carbohydrates, and possibly fats. Thiamin is a part of the molecule of cocarboxylase, and in its absence the oxidation of pyruvic acid, an intermediary product of carbohydrate metabolism, does not proceed normally. Riboflavin is a component of Warburg's "yellow enzyme," related to the oxidation of carbohydrate and of *d*-amino acid oxidase, an enzyme which participates in the oxidative deamination of *d*-amino acids. Both coenzymes I and II (codehydrogenases) are derivatives of the amide of nicotinic acid (niacin amide). These are also involved in the oxidation of carbohydrate. In experimental nicotinic acid deficiency, significant decreases in the amounts of coenzyme I in muscle and liver have been observed. With a better understanding of the processes of intermediary metabolism will come a clearer picture of the exact function of these vitamins.

The mechanism of the action of the fat-soluble vitamins is even less clearly defined. Vitamin A appears to be related to the visual purple system of the retina, vitamin D to the utilization of dietary calcium and phosphorus, while vitamin K is essential for the normal coagulation of the blood. In vitamin K deficiency, prothrombin, an indispensable factor in coagulation, is greatly diminished in the blood. The administration of vitamin K results in an increased level of prothrombin of the blood, although so far as is now known the vitamin is not a constituent of prothrombin. The mechanism of its action is unknown.

Vitamin K is a complex derivative of naphthoquinone. It is noteworthy that the organic chemist has succeeded in synthesizing a naphthoquinone derivative simpler than either of the known K vitamins of natural occurrence, which produces the same effect as the natural vitamin. This compound, 2-methyl-1,4-naphthoquinone, now officially (U. S. Pharmacopoeia, 1942) designated as "menadione," has been widely used clinically to replace the more expensive purified K vitamin from natural sources. It is the first achievement of the organic chemist in the search for compounds similar in activity to the natural vitamins but of simpler structure. Such studies have led to important developments in the field of chemotherapy and further developments along these lines in vitamin research are to be expected.

THE SYNTHETIC VITAMINS IN INDUSTRIAL CHEMISTRY

The extensive use of the purified vitamins and the difficulty of their preparation from natural sources have presented a challenge to the industrial chemist, which has resulted in marked cuts in the cost of the synthetic vitamins. The changing prices of some of these are presented in Table 3, taken from the discussion of R. T. Major (Chem. Eng. News 20: 517, 1942). It is estimated that despite the ready availability of ascorbic acid in fruits, 17 tons of the acid were produced synthetically in the United States in 1940, with an estimated annual production of 80 to 100 tons shortly (Major).

TABLE 3

Changing costs of synthetic vitamins

VITAMIN	YEAR	COST	YEAR	COST
Ascorbic acid	1934	$213.00/oz.	1942	$1.65/oz.
Thiamin	1935	300.00/gm.	1942	0.53/gm.
Riboflavin	1938	17.50/gm.	1942	1.25/gm.
Nicotinic acid	1935	35.00/lb.	1942	6.50/lb.
Pyridoxine	1939	12.00/gm.	1941	3.00/gm.
Calcium pantothenate	1940	2.50/gm.	1942	0.50/gm.

In conclusion, it should be remembered that, despite the value of vitamins as therapeutic agents in acute deficiency states, the vitamins as they occur naturally are constituents of foodstuffs. The normal diet can and should be so selected as to ensure an abundant supply of all the known vitamins as they are present along with other important food constituents in natural foodstuffs. In our enthusiasm for the achievements of synthetic organic chemistry, we must not forget that the vitamins in natural foods are associated with other important dietary components essential for their normal functioning. Professor H. C. Sherman has well expressed this point of view when he warns with reference to excessive zeal in the use of vitamin D that "Confidence in the value of the anti-rachitic vitamin must not lead to any lack of care in providing a liberal supply of calcium and phosphorus during growth."

CONTROL OF WAR

Force is inescapable in human affairs. It cannot merely be abandoned; it must be controlled and used. Like fire, it may be wantonly destructive; but, like fire, it may be immeasurably useful when brought under control and properly directed. Force has been used by states in the past for selfish aggrandizement, for exploitation and conquest; but it has also been used to maintain rights and to uphold principles which humanity holds dear and upon which civilization advances. Indeed, war, in the past, has been the last resort by which a nation could settle its disputes, defend its rights, or remedy its wrongs. These are necessary functions, for which provision must be made in any human society. Consequently, no nation can afford to give up its right to make war—no matter how stupid or costly this method may be—until a substitute has been provided which can serve these purposes. Until then no nation can afford to disarm. It will not be enough merely to establish an international police force which can restrain a nation from making war. There must also be methods for settling disputes to which the most recalcitrant state would be obliged to submit; there must be means for remedying an unjust situation or for changing an unsatisfactory legal status quo. The control of war is not an end in itself; it is rather the removal of an obstacle which stands in the way of the realization of human ideals.—*The Aim of the United Nations. Third Report. The United Nations and the Organization of Peace, New York City, February 1943.*

The Role of Vitamins in Energy Transformations[1]

VAN R. POTTER, Ph.D.

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THE last time that I had the pleasure of speaking to a group like this was in the fateful summer of 1939 at the Högvalla School about 30 miles east of Helsinki. This is the school at which all of the leaders for Finland's Swedish Martha Association are trained. The lecture was given in the Swedish language which was quite new to me and in writing up the occasion in their *Journal*, the "Marthas" commented with tongue in cheek that "the lecture was given in genuine Swedish with an American accent." The lecture today will be on nutrition, with a chemical accent. I hope, too, that the group here today will regard my efforts as charitably as did that group of Marthas, who have had an exceptional role in the development of their country and have established a record that home economists everywhere would do well to study. However, that is not the subject of today's discussion, which is concerned with the interrelationship of vitamins and the respiratory enzymes, with particular emphasis on energy transformations.

THE FOOD-ENERGY-ENZYME CYCLE AND THE VITAMINS

As was recently pointed out,[2] if all of our foodstuffs are classified according to the uses to which they are put, it will be found that there are really only two broad categories of food utilization: either the food is burned as fuel or it is used as a building block of some sort. If as a building block, there are again two main classes of utilization: it may enter some supporting structure such as bone, ligament, hair, cell stroma or connective tissue, or it may enter into the structure of the many catalysts or enzymes which the body contains. This relationship between *food* and *life* is shown in Figure 1. Certain enzymes of the body burn the fuel foodstuffs, yielding energy which is used by other enzymes to convert the building blocks into new structures and more enzymes. Thus, life is represented as an expanding spiral in which enzymes beget enzymes. It is worthwhile, I think, to digress for a moment and attempt to explain some of the mystery of viruses, which are really "outlaw" enzymes.

Life is a harmonious community of enzymes in which the monetary unit is expressed in energy units, and in which inorganic phosphate and phosphate esters represent the medium of energy exchange. The various enzymes all contribute to the welfare of the enzyme community, and each in turn is benefited by the action of other enzymes. The viruses appear to be able to utilize that energy for their own selfish aggrandizement, which process also competes for the building blocks necessary to life, but the virus contributes nothing to the enzyme community and is unable to obtain energy for itself. Thus, in general terms, Figure 1 shows that enzymes are necessary for obtaining the energy from food and that this energy is in turn utilized to synthesize more enzymes, which utilize more food to give more energy which gives more enzymes, and so on, *ad infinitum*.

But now let us see if we can be specific with regard to this proposition. The answer is, we can. Figure 2 shows diagrammatically just about all that is known about the bodily reactions which yield energy. In the first place, the only reactions we really know anything about are those of carbohydrate breakdown. It is interesting to note that all of these reactions appear to be centered on one goal: namely, the synthesis of adenosinetriphosphate, which may be looked upon as the immediate energy supply or the "pocket money" of the living organism. However, as is usually the case, the amount of "pocket money" never gets very large, and income and outgo are just about balanced. In brain tissue, the balance is so close that adenosinetriphosphate disappears from the excised brain in about three minutes. I will give one specific example of the utilization of adenosinetriphosphate energy to convert a vitamin to an enzymatic component:

Cocarboxylase is otherwise known as thiamin pyrophosphate. Upon examination of the structural formulae, it is seen that, by the addition of two molecules of phosphate to vitamin B_1, the enzymatic component is formed. The free vitamin is useless in the enzyme system. Let us now examine Figure 2 and see where these compounds fit in. Lipschitz, Potter, and Elvehjem[3] in 1938 showed that the conversion of vitamin B_1 to cocarboxylase represents a utilization of phosphate

[1] Presented before the Wisconsin Dietetic Association, Milwaukee, November 13, 1942.

[2] J. Am. Dietet. A. 18: 359, 1942.

[3] Biochem. J. 32: 474, 1938.

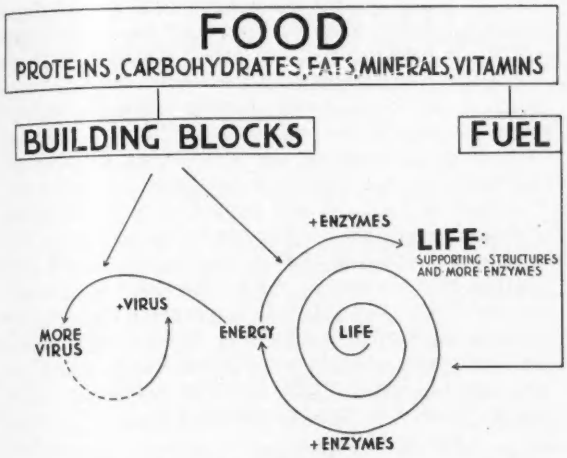

FIG. 1. *Schematic diagram showing relationship between food and life*

Life is represented as a community of enzymes plus their supporting structures

fers. The finished product, cocarboxylase, is necessary for the oxidative breakdown of pyruvate and α-ketoglutarate, which are also shown in Figure 2. The energy of the oxidative reactions is utilized for the conversion of inorganic phosphate to the esterified state in the form of accumulated adenosinetriphosphate which, you will recall, can be used to convert vitamin B_1 into more cocarboxylase, thus completing the cycle. This, then, is a specific example of the general proposition illustrated in Figure 1.

I wish to emphasize that the adenosinetriphosphate can be used for a variety of reactions and perhaps all bodily energy needs. According to present knowledge, it is the compound which is most nearly synonymous with the word "Energy" in Figure 1.

Not all of the vitamins have been demonstrated to enter the phosphorylation cycle at both the income and outgo stages, but the ones we know the most about are certainly involved in the phosphate picture. Thus the antipellagra vitamin, nicotinic acid (niacin), is an integral part of two of our most important coenzymes. In the body, it must take up phosphate before it can

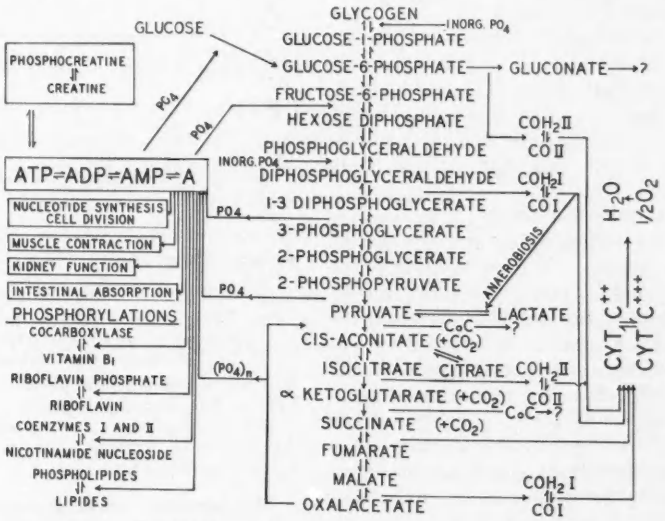

FIG. 2. *Metabolic reactions involving energy transformations*

ATP = Adenosinetriphosphate
ADP = Adenosinediphosphate
AMP = Adenosinemonophosphate (adenylic acid)
A = Adenosine
Co I = Coenzyme I (adenosine + nicotinamide + ribose + $2H_3PO_4$)
Co II = Coenzyme II (adenosine + nicotinamide + ribose + $3H_3PO_4$)
CoC = Cocarboxylase (vitamin B_1 + $2H_3PO_4$)
Cyt c = Cytochrome *c* (specific protein + iron porphyrin)

The various indicated paths of energy utilization have not all been rigorously proved, and further research is being done on these problems.

energy. The exact mechanism is shown in the lower left portion of Figure 2, under "Phosphorylations." The original phosphate comes from the dephosphorylations which occur during the breakdown of hexosediphosphate or 3-phosphoglyceric acid, which can be found in Figure 2 under the column headed "Glycogen." Adenosinetriphosphate mediates these phosphate transbecome an enzyme component. After that, it can catalyse reactions which fix phosphate. (*See* Figure 2 for both formation and functions.) Similarly, riboflavin is inactive as such but must first be phosphorylated. At this point, I would like to emphasize that none of these phosphorylated vitamins is a catalyst by itself but must always be attached to a specific protein

to form the complete enzyme. The vitamin forms the prosthetic group or coenzyme and is smaller than the protein by more than one-hundredfold. It is believed that certain flavin enzymes mediate the reactions between the coenzymes and cytochrome *c* (both of which are shown in Figure 2), and their formation probably follows the typical reaction shown with vitamin B_1 (*see* Figure 2).

Ascorbic acid has not been shown to act as a prosthetic group on any known enzyme, but several enzymes, namely esterase, phosphatase, succinic dehydrogenase and cytochrome oxidase, have been shown to be decreased in scurvy. It is believed that ascorbic acid is necessary for the maintenance of the protein portion.

Another vitamin which is likely to become involved in these reactions is biotin, the isolation and identification of which were greatly facilitated by the work of Dr. Helen Parsons on the egg-white injury factor, which is now known as biotin. The structure of this vitamin was announced by du Vigneaud on October 9, 1942, as 2'keto - 3,4 - imidazolido - 2 - tetrahydrothiophene - n - valeric acid. I have no doubt that the name, biotin, will be retained, at least temporarily.

Pantothenic acid is also involved in these mechanisms of energy transfer. Dorfman *et al.* at the University of Chicago have shown that pantothenic acid affects the ability of certain bacteria to oxidize pyruvic acid, and Elvehjem and co-workers have obtained similar evidence with both biotin and pantothenic acid-deficient rats.

I should like now to leave the specific vitamins and turn to a specific enzyme system which includes several of these nutritional factors. If one considers the oxidation of any of the substrates which require coenzyme I, lactic acid for instance, it will be seen that the oxidation proceeds over a number of respiratory enzymes, each of which consists of a protein plus a specific prosthetic group. In this case, the oxidation requires the dehydrogenase plus coenzyme I, which we know contains niacin plus a flavin-containing enzyme, plus cytochrome *c*, an iron-containing enzyme, plus cytochrome oxidase, which is believed to contain either iron or copper.

THE BIOCHEMISTRY OF MUSCLE CONTRACTION

Thus far, I have shown you some of the reactions by which foodstuffs are oxidized in the body and have shown you that most of the B-vitamins are needed to form the prosthetic groups of the specific enzymes which do this job. I have tried to emphasize the fact that the energy from these dehydrogenations and oxidations can be accounted for in terms of inorganic phosphate raised to a high energy level in the form of adenosinetriphosphate. I have shown how this energy could be utilized for the phosphorylation of some of the vitamins to the form in which they are active in the body.

However, the most arresting question has been that of muscle contraction, since so much was known from the physiological side. Biochemists had believed for some time that the energy for muscular contraction was furnished by this same adenosinetriphosphate of which you have heard so much. Yet the physiologists could always say, yes, but what makes the muscle *contract*? The gap between the mechanical act of contraction and the biochemical energy transfers has been virtually closed by the brilliant researches of the Russian biochemists Engelhardt and Lyubimova, in Moscow, and their findings have been confirmed by Bailey and Needham in England, and Szent-Györgyi in Hungary. I shall also mention work in our own laboratory which supports the findings. The experiments indicate that myosin, the protein which actually contracts in muscle contraction, is identical with the enzyme which breaks down adenosinetriphosphate to adenosinediphosphate and inorganic phosphate. This reaction releases a great deal of energy. The question is, how could that energy be used to do muscular work?

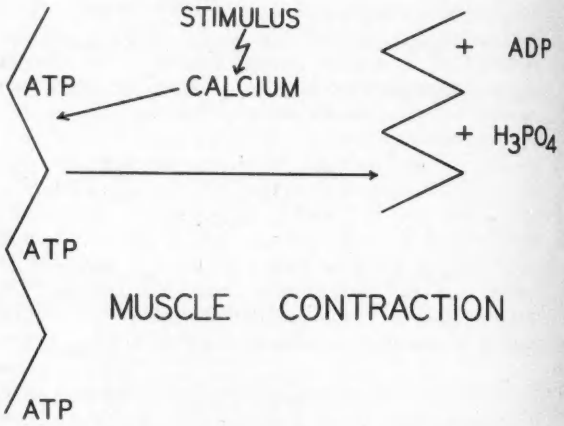

FIG. 3. *Schematic diagram on the mechanism of muscular contraction, based upon researches of Engelhardt and of Bailey and their associates on myosin*

ATP = Adenosinetriphosphate
ADP = Adenosinediphosphate
The extended line on the left represents myosin in the extended form, while the line on the right represents myosin in the contracted form.

The Moscow workers prepared myosin fibers by a process similar to that which is used to make rayon fibers, *i.e.* by forcing a myosin solution through a jet into an appropriate jelling solution. These fibers were then used to support small weights: When adenosinetriphosphate (ATP) was added to the solution, the fibers relaxed and lengthened. Addition of adenosinediphosphate (ADP) or any other compound had no effect. It has now been found by Bailey that the myosin fiber will split the adenosinetriphosphate only when calcium ions are added. That is, the calcium ion is the coenzyme for this breakdown, and the muscle fiber appears to be both the enzyme and the contractile element. Thus the picture at present looks something like that shown in Figure 3. The muscles are in the relaxed state, saturated with ATP. Along comes a stimulus, releasing calcium ions which then activate the fibers to split ATP to ADP and inorganic phosphate. In the absence of ATP, the muscle fiber con-

tracts, doing work equivalent to the energy disappearing when ATP goes to ADP. We know that glycolysis cannot proceed in the absence of inorganic phosphate and hence we also now know why glycolysis begins shortly after a muscle contracts, since the contraction releases inorganic phosphate. The glycolytic process proceeds then to convert the inorganic phosphate back to ATP and when this mopping-up process is completed, glycolysis stops.

Our own experiments, as yet unpublished, were based upon a knowledge that an animal can be anesthetized with magnesium injections and revived with calcium injections. The magnesium anesthesia begins with a muscle paralysis and proceeds centrally. We reasoned that magnesium causes paralysis by blocking the calcium away from the adenosinetriphosphatase (*i.e.* myosin). This hypothesis was supported by the actual isolation of twice as much adenosinetriphosphate from the muscles of magnesium-treated animals as was obtained from untreated or etherized animals. Similar results were obtained with brain tissue.

Thus it appears that no matter what the action, whether it is a turtle pulling in its neck or a U. S. Marine going over the top, the energy comes from the breakdown of adenosinetriphosphate. As yet we have no knowledge of the specialized enzyme which is analogous to myosin in tissues other than muscle. It may be noted in passing that the peculiar metabolism of cancer tissue could be due to the unrestrained utilization of adenosinetriphosphate energy for growth and that cancer is in many respects similar to a virus disease.

Returning then to Figure 1, we find that the word "Energy" seems to be almost synonymous with adenosinetriphosphate in the living organism. We have seen that the processes of glycolysis and respiration, which represent the combustion of fuel, lead to adenosinetriphosphate synthesis and that many of the B-vitamins are converted to respiratory enzymes using this energy, which they then pay back manyfold by functioning as enzyme components. It is my belief that a knowledge of these reactions cannot help but lead to a better understanding of the role of nutrition in bodily economy and thus to better practical nutrition

Dietary Factors in Cancer Tissues

The results suggested that both iron and lipid metabolism might be involved in carcinogenesis. Since the carcinogens are soluble in fat and insoluble in water an interference with lipid metabolism would readily be possible. The connection with iron is less obvious, although cytochrome, an iron-containing respiratory enzyme, is known to be low in tumor tissue. Further studies are needed to determine the effect of the ingestion of iron and lipids upon the progress and growth of epidermal cancers, and to correlate the development of carcinomas with other chemical constituents of the tissue.—*Nutrition Reviews, 1: 216, 1943.*

Storage of Vitamin A

Stores of vitamin A can be drawn upon for extended periods without replenishment from dietary sources. . . . Those who are interested in the philosophic aspects of science could find here an example of adaptation to nature. No doubt man formerly obtained his vitamin A mostly during the summer months, in accordance with the seasonal production of carotene (vitamin A) in plants. While it is desirable to secure one's quota of vitamin A each day, yet it is good to know that, if the vitamin A stores are high, no nutritional catastrophe is likely to develop if one misses his allowance of this dietary essential now and then.—*Nutrition Reviews 1: 176, 1943.*

Substitution of Georgia Cane Syrup for Sucrose in Cakes[1]

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School of Home Economics, University of Georgia

FOR the second time within a single generation, the United States is faced with the problem of a nationwide shortage of sugar. To alleviate the acuteness of this shortage, substitutions of various sweetening agents for sucrose have been suggested. Among these, one of the most promising is sugar-cane syrup. The purpose of this study was to determine: 1. The proportion of Georgia cane syrup which could be substituted for sucrose in the making of butter cakes and sponge cakes. 2. The necessary variations in method of mixing to obtain a desirable crumb. 3. The variations in amounts of ingredients needed to obtain a desirable crumb. 4. Additional factors affecting the palatability of cakes made with syrup.

PROCEDURES USED

A survey was made of the brands of pure Georgia cane syrup available in Athens, Georgia. Sample cakes were baked to determine which brand to use. The syrup that gave the preferred product from the standpoint of flavor, color, and texture was used for the remainder of the work.

Throughout the study an effort was made to keep the experiments as practical as possible in order that the results might be of immediate use to the consumer or homemaker. For that reason, a general all-purpose, soft-wheat flour, a double-acting baking powder, fresh eggs, whole milk, and a hydrogenated fat were used. The following recipe and method for butter cake were used as a standard. All ingredients were allowed to reach room temperature (28 to 29° C.) before the mixing began.

Shortening	¼ cup (55 gm.)	Flour	1 cup (87 gm.)
Sugar	½ cup (100 gm.)	Baking powder	1 tsp. (4 gm.)
Egg	1 (50 gm. av.)	Salt	¼ tsp. (1 gm.)
Milk	⅓ cup (79 gm.)		

	Strokes
1. Fat creamed	200
2. ¼ sugar added and creamed	200
3. ¼ sugar added and creamed	200
4. ¼ sugar added and creamed	200
5. Egg yolk added and creamed	200
6. ¼ flour (with baking powder and salt) added and mixed	50
7. ½ liquid added and mixed	25
8. ¼ flour added and mixed	100
9. ½ liquid added and mixed	25
10. ¼ flour added and mixed	100
11. Egg white beaten to peak stage (rotary), folded into batter quickly	200

Each cake was baked in a layer pan for 30 minutes in the center of the oven, which was preheated to 350° F. as suggested by Peet and Lowe (1).

The cakes were allowed to cool 10 to 15 minutes before being turned out of the pan on to a cooling rack. They were allowed to cool approximately one hour before being cut for examination.

The cakes were judged subjectively for appearance, color, size, shape, velvetiness of texture, size and quality of crumb, and flavor.

RESULTS OF VARIOUS METHODS

Undesirable results were obtained by the simple substitution of syrup for sugar, measure for measure, without varying the method or proportions. The very poor, crumbly product contained large cells, had a flinty feel, and a bready appearance (Fig. 1). Probably these results were due to the extra liquid in the syrup which increased the specific gravity to the point where the structure was not able to hold the cake together. Furthermore, it is likely that with the increased liquid, an oil-in-water rather than a water-in-oil emulsion was formed. As a result, instead of the flour particles being coated with fat, the globules of fat were coated with egg and flour, and the soft velvety texture characteristic of a standard butter cake was replaced by a hard flinty texture characteristic of an oil-in-water emulsion or a curdled batter.

A coarse-textured, large-celled product was obtained with the muffin method of mixing (Fig. 2), that is, mixing and sifting the dry ingredients and adding the wet ingredients.

Improved texture (Fig. 3) was obtained when one-fourth of the syrup was creamed into the shortening, one-half added as liquid, and one-fourth beaten into the

[1] Received for publication November 21, 1942. This study was made by Miss Lund in partial fulfilment of the requirement for the Master of Science degree.

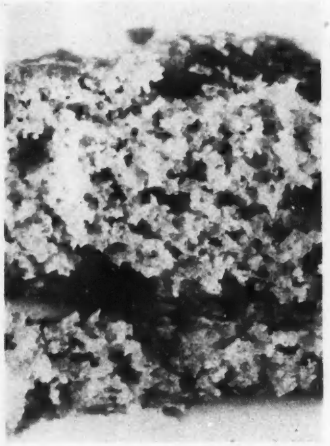

FIG. 1. *Syrup cake, conventional method of mixing*

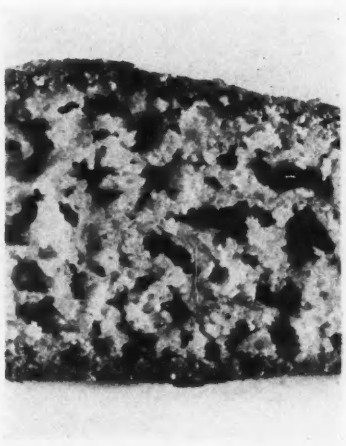

FIG. 2. *Syrup cake, muffin method*

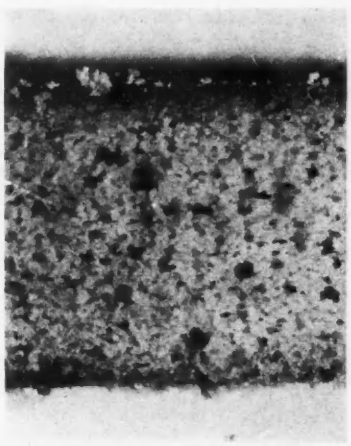

FIG. 3. *Syrup cake, experimental method*

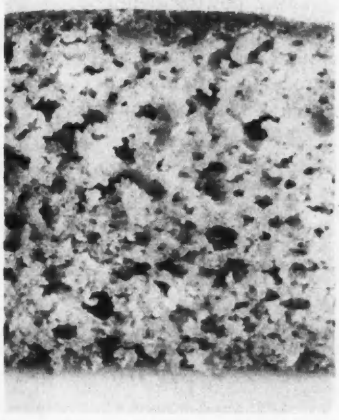

FIG. 4. *Syrup cake. 1 cup syrup, 1 cup flour, no milk*

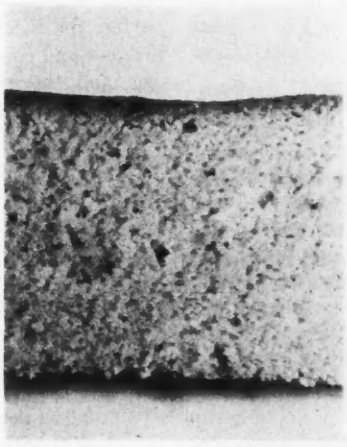

FIG. 5. *Syrup cake. 1½ egg per cup flour, no milk*

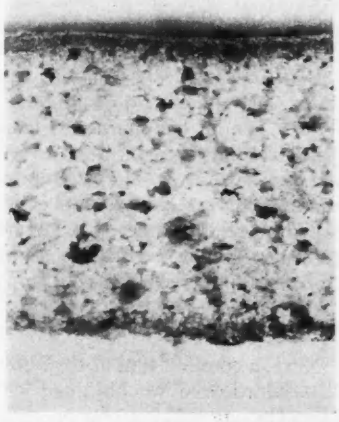

FIG. 6. *Syrup cake. 1½ tsp. baking powder per cup flour, no milk*

egg white foam, which was folded quickly into the batter at the end of the mixing process.

The greatest problem in mixing was to maintain the water-in-oil emulsion necessary for a velvety texture. It was found that if the unbeaten egg yolk was added before the last portion of the syrup was creamed into the fat, the emulsion did not break. It was also noted, in agreement with Kress (2), that if a portion of flour was added to the creamed fat-sugar mixture, the emulsion did not break so easily. Consequently a better texture was obtained.

ADJUSTMENTS OF AMOUNTS OF INGREDIENTS

Liquid: As the amount of syrup was increased, it was necessary to decrease the amount of milk. In the 100 per cent syrup cakes, it was not necessary to use any milk. The resulting cake was small in volume and coarse in texture (Fig. 4).

Egg: The amount of egg was increased to one and one-half to give the batter more strength and to compensate, partially, for the excess liquid. A rather tough and rubbery cake of fine, compact grain resulted (Fig. 5). This agrees with Nason's findings that an increase in eggs is apt to give a grain that is too fine (3).

Baking Powder: The baking powder was increased to one and one-half teaspoons to determine whether the increased leavening would counteract the fineness and compactness of texture obtained with the additional egg. Increased volume, a coarse and bready texture, and a crust that browned too readily resulted (Fig. 6). Stevens, Childs, and Bailey (4) found that as the amount of sodium bicarbonate in baked products increased, the crust became darker.

Sodium Bicarbonate: One-fourth teaspoon sodium bicarbonate in addition to one teaspoon baking powder gave the same dark color and poor texture as was obtained with the additional baking powder (Fig. 7). Daniel and Heisig (5) found that the acidity of corn syrup, molasses, and honey can be entirely disregarded in cake-making as only one-seventh teaspoon sodium bicarbonate was necessary to neutralize a cup of any of their samples. This is not in agreement with Hunt and

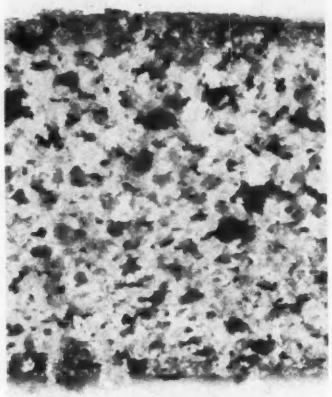

FIG. 7. *Syrup cake. ¼ tsp. baking soda, 1 tsp. baking powder per cup flour, no milk*

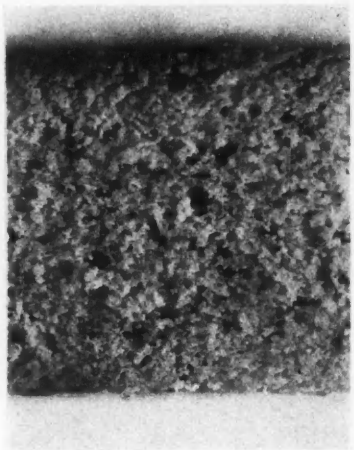

FIG. 8. *Syrup cake. 5 tbsp. shortening per cup flour, no milk*

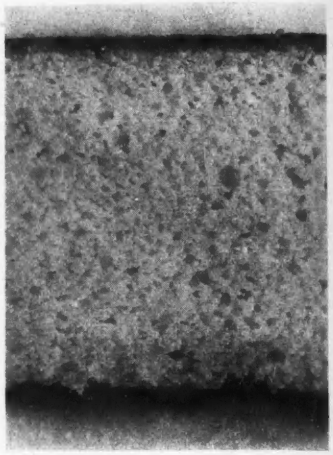

FIG. 9. *Sucrose cake*

Atwater (6) who stated that the allowance of sodium bicarbonate for one cup of honey generally ranged from one-fourth to one-half teaspoon.

Both of these cakes, having an excess of leavening, staled very quickly.

Fat: The fat was increased from 4 to 5 tablespoons, then 6, to improve the texture as suggested by Bailey and LeCleric (7). The volume of each cake was the same. The one with 5 tablespoons fat had a greatly improved texture (Fig. 8). That with 6 tablespoons fat was very tender, seemed to separate into layers, and the crust appeared to have a shiny, sugary gloss.

EFFECT OF COMBINATION OF VARIABLES

Next, a combination of the above variables was used. A standard cake was obtained with 100 per cent syrup when the egg, baking powder, and the shortening were increased and all the milk omitted (Fig. 10). The additional egg strengthened the protein structure of the batter; the increased baking powder counteracted the fineness and compactness of grain due to the increased egg, and the extra shortening improved the texture. The recommended ingredients and method of mixing butter cake made with cane syrup are as follows:

Fat	10 tbsp.	Flour	2 cups
Vanilla	1 tsp.	Baking powder	3 tsp.
Syrup	1 cup	Salt	½ tsp.
Eggs	3	Milk	0

	Strokes
1. Cream fat, add flavoring	200
2. Add ⅓ syrup (2 tbsp.)	200
3. Add egg yolks	300
4. Add ⅓ syrup	300
5. Add ⅓ flour (with baking powder and salt)	50
6. Add ⅓ syrup	25
7. Add ⅓ flour	100
8. Add ⅓ syrup	25
9. Add ⅓ flour	100
10. Beat egg whites to peak stage, beat in remaining syrup, fold quickly into batter	200
11. Pour into greased paper-lined layer pans	
12. Bake at 350° F. for 30 minutes	

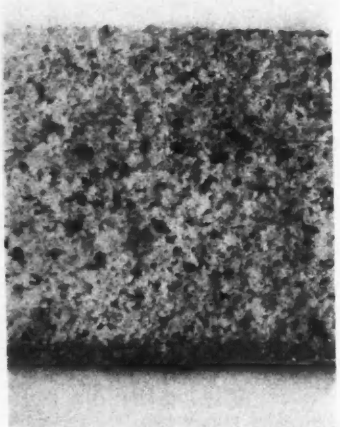

FIG. 10. *Syrup cake. Same proportions all ingredients as in sucrose cake (Fig. 9) except omission of liquid and substitution of syrup for sugar*

Staling: Examination of the cakes 12, 24, and 48 hours after baking showed that they were not so stale and dry as those made with sucrose. This was probably due to the hygroscopic properties of the invert sugars present in the syrup.

Flavoring: The preference of the staff members and students were in the following order: 1. Lemon ¼ tsp. and vanilla ¼ tsp. 2. Ginger 1 tsp., cinnamon ½ tsp., cloves ¼ tsp., nutmeg ¼ tsp. 3. Cocoa 3 tbsp. substituted for 3 tbsp. flour. 4. Vanilla ½ tsp. 5. Spice same as (2) omitting ginger. 6. Chocolate 1 square.

The ginger cake was criticized for its lack of dark color and molasses flavor, both of which are commonly associated with gingerbread. The spice cake was not enjoyed because of the strong syrup flavor. Apparently, instead of disguising the syrup flavor, the spice accentuated it.

SPONGE CAKE

It was found that a satisfactory sponge cake could not be obtained by adding the cane syrup to the egg yolks. The amount of liquid in the egg-syrup mixture was too great to produce a stable cake. The cakes rose satisfactorily, but collapsed when cooled. A lower baking temperature (325° F.), to determine whether the cakes would dry out sufficiently to set the cell walls, did not alter the results.

A better cake was obtained when two-thirds of the syrup was beaten into the egg yolks and one-third into the egg whites. This gave a very moist cake with a tendency to sag in the middle where it was not supported by the pan. It was necessary to add 2 teaspoons cornstarch to remedy the sagging. This resulted in a product less moist and of a finer, more uniform texture.

Conceivably, if additional leavening in the form of baking powder or baking soda were added, the structure of the batter might be strengthened by neutralizing the acidity of the syrup and thus decreasing the peptization of the protein. One-fourth teaspoon baking powder was added to one cake and a "pinch" of soda to another. Both strengthened the cake structure and gave a better volume. As in the study of butter cakes, the soda produced a darker product.

To reduce the moisture content, some syrup was concentrated to a boiling temperature of 226 and 248° F., then cooled slightly and beaten into the foam. The result in each case was a dark, compact product.

The recommended ingredients and method for making sponge cake with cane syrup follow:

Syrup	⅓ cup	Salt	1/16 tsp.
Eggs	2	Cornstarch	2 tsp.
Flour	7 tbsp.	Vanilla	½ tsp.
Baking powder	¼ tsp.		

1. Add ⅔ syrup to yolks a little at a time. Beat until light and lemon-colored.
2. Sift flour, baking powder and cornstarch over mixture. Fold in, using as few strokes as possible to blend.
3. Beat egg whites until foamy. Add salt and vanilla. Beat in remaining ⅓ syrup a little at a time. Beat until foam forms a peak which will fall back on itself about ¼ inch.
4. Fold into yolk-flour mixture, using as few strokes as possible to blend well.
5. Pour into ungreased stemmed pan, about two-thirds full, and bake in preheated oven (350° F.) for 30 minutes.

ANGEL CAKES

Similar variations were made for angel cake as for the yellow sponge. It was necessary to add one tablespoon flour, 2 teaspoons cornstarch, and one-fourth teaspoon baking powder to the standard recipe for desirable results.

The recommended ingredients and method for making angel cake with cane syrup follow:

Egg whites	½ cup	Cornstarch	2 tbsp.
Salt	1/16 tsp.	Baking powder	¼ tsp.
Syrup	10 tbsp.	Vanilla	½ tsp.
Flour	9 tsp.		

1. Beat egg whites until foamy. Add salt. Beat in syrup a little at a time until all is added. Beat until foam forms a peak which will fall back on itself about ¼ inch.
2. Fold in the sifted flour, cornstarch, and baking powder, using as few strokes as possible.
3. Pour into ungreased stemmed pan and bake in preheated oven (350° F.) for 30 minutes.

The cane syrup sponge and angel cakes, like the cane syrup butter cakes, remained moist longer than the sucrose cakes. However, they were hardly comparable to the fluffy white or golden yellow sucrose products. Since appearance is an important characteristic of these two cakes, cane syrup is not recommended for use as an ingredient in them.

CONCLUSIONS

The use of Georgia cane syrup in butter cakes makes an interesting variation in the menu and is an aid in stretching the sucrose allotment. In a 100 per cent substitution of syrup for sucrose, adjustments of the proportions of the other ingredients and of the method are necessary.

REFERENCES

(1) Peet, L. J., and Lowe, B.: Starting baked products in cold versus preheated ovens. Iowa Agric. Exper. Sta. Res. Bull. 213, 1937.
(2) Kress, C. B.: The relation between the percentage of flour and the percentage of sugar in a cake testing formula. Cereal Chem. 8: 1931.
(3) Nason, E. H.: Introduction to Experimental Cookery, p. 167. New York: McGraw-Hill Book Company, Inc., 1939.
(4) Stevens, E., Childs, A., and Bailey, C. H.: Some applications of spectro-photometric methods to baking problems. Cereal Chem. 5: 1928.
(5) Daniels, A. L., and Heisig, E. H.: Acidity of various syrups used in cookery. J. Home Econ. 11: 199, 1919.
(6) Hunt, C., and Atwater, H.: Honey and its uses in the home. U. S. Dept. Agric. Farmers' Bull. 653, 1915.
(7) Bailey, L. K., and LeCleric, J. A.: Cake and cake-making ingredients. Cereal Chem. 12: 1935.

COLDS—AND VITAMINS

A report of an investigation by Cowan, Diehl and Baker (p. 1267, J. A. M. A. Dec. 19) of the effect of vitamins on the prevention of colds—that affliction which so frequently heralds not only "employee absenteeism" but more serious acute and sometimes chronic invalidism, merits comment. The authors conclude that "a controlled study yields no indication that either large doses of vitamin C alone or large doses of vitamins A, B_1, B_2, C and D and nicotinic acid have any important effect on the number or severity of infections of the upper respiratory tract when administered to young adults who 'presumedly are already on a reasonably adequate diet.'" The abstract of the discussion which follows is illuminating in view of the foregoing comment. Comments such as this were made: "May I inquire of the authors whether one or more vitamin deficiencies were evidenced when the observations began? If not, what would be the rationale of administering vitamins to persons among whom no deficiencies had been determined with a view of influencing the incidence of colds due to viruses?" The reply was that no analyses were made of possible pre-existing vitamin deficiencies. It was "assumed" that none were present since "most of them [the subjects] were on a reasonably adequate diet."

Compilation of Recent Data on Mineral and Vitamin Values of Foods

RUTH COWAN CLOUSE, Ph.D.

IN VIEW of the interest shown in the first compilation of recent data on mineral and vitamin values of foods prepared by a subcommittee of the Diet Therapy Section of the American Dietetic Association under the direction of Dorothea Fletcher Turner, section chairman, this project has been continued. (*See* this JOURNAL for July 1942 and the accompanying table.)

Forty-nine articles have been reviewed for this second compilation, covering the period from May 1942 to December 1942. The review of these data shows that in addition to continued study of the distribution of the members of the vitamin B complex, much research has been directed toward the analyses of fruits and vegetables for vitamin C with particular reference to the effect of cooking and other methods of processing on this vitamin.

Studies of the vitamin C content of so-called "dairy beverages" prepared from orange, grapefruit and tomato juices, and of such special products as unripe nuts and rose hips grown in the British Isles and the United States also have been reported. The latter products have proved to be unusually rich sources of ascorbic acid, which might well play an important role in war diets.

Green peppers have been assayed for the citrin (vitamin P) content, yielding 0.0006 to 0.0007 mg. per 100 gm. of the raw product.[29]

Of interest also is the work of Hummel, Shepherd, Galbraith, Williams, and Macy[2] on the chemical composition of 22 common foods and comparison of analytical with calculated values of diets. In addition to data for the calcium, phosphorus and iron content of foods studied, values were also assembled for the less commonly determined minerals (sulfur, magnesium, chlorine, sodium, potassium, nitrogen, carbon) and for fat and calories. For lack of space, these last named nutrients and other less commonly determined minerals were not included in the present compilation.

Also of particular interest are the figures reported for the applicability of microbiological and chemical methods to the determination of niacin (nicotinic acid) in cereal products.[8] A collaborative study was conducted with a view to improving recently reported methods so that they could be considered as reliable control measures in the flour and bread enrichment program. The collaborators assayed a whole wheat flour and a white flour in addition to several samples of treated flour. The range of values for the white flour and whole wheat flour is reported in the accompanying table. The wide variations observed were reported to be due largely to the different methods of extraction used. The incidence of high values in certain types of extracts is thought to be due not to a greater efficiency of extraction but to hydrolysis of an unknown compound which otherwise is unavailable to the organism. The unknown compound presumably is a nicotinic acid derivative which is believed to be available to man, although definite proof must await biologic assay. No loss of nicotinic acid was found to occur in the production of bread from whole wheat flour or nicotinic acid-enriched white flour.

Other recently published compilations of interest to dietitians are: Hewston, E. M., and Marsh, Rosemary L., "Vitamin Values of Foods in Terms of Common Measures," U. S. Department of Agriculture, Miscellaneous Publication No. 505, 1942; Tressler, D. K., "The Nutritive Value of Dried and Dehydrated Fruits and Vegetables," New York State Agricultural Experiment Station, Technical Bulletin No. 262, 1942; "Studies on the Vitamin Content of Tissues," The University of Texas Publication No. 4237, 1942; McVicar, R. W., and Berryman, G. H., "Nicotinic Acid in Foods," *Journal of Nutrition* 24: 235, 1942; Munsell, Hazel E., "The Vitamin A, Vitamin B_1 (Thiamin), Vitamin C (Ascorbic Acid) and Riboflavin Content of Common Foods," *Milbank Memorial Fund Quarterly*, 21: 102, 1943. An extensive table of food values also is included in the "Nutrition Yardstick," a convenient "graphic calculator" prepared and published by the Department of Nutrition, National Live Stock and Meat Board, Chicago.

The contributions of the following members of the American Dietetic Association in the collection of data included in the two compilations thus far published are gratefully acknowledged: J. Ernestine Becker, Anne Bourquin, Felisa Bracken, Eva G. Donelson, Hazel Hauck, Ruth L. Huenemann, Marjorie Jorgenson, Ethel Austin Martin, Hazel E. Munsell, Jeanette Owens, K. Price, Cecelia Shuck, Sybil Smith, Lillian B. Storms, and E. Neige Todhunter.

RECENT FIGURES ON MINERAL AND VITAMIN VALUES OF FOODS*

I. Cereals and Cereal Products

Cereals	
Corn, white, dried	Alpha-Tocopherol 1.5 to 3.0 mg.[1]
Corn, yellow, dried	Alpha-Tocopherol 2.6 to 3.6 mg.[1]
Cornflakes	Ca 0.007 gm.[2] P 0.042 gm.[2]
Cornmeal, raw	Thiamin 0.097 mg.[3]
Cornmeal, cooked	Thiamin 0.022 mg.[3]
Oatmeal, raw	Thiamin 0.530 mg.[3]
Oatmeal porridge	Thiamin 0.130 mg.[3]
Rice, raw	Thiamin 0.084 mg.[3]
Rice, cooked	Thiamin 0.010 mg.[3]
Wheat bran, stone-milled, 54% extraction	Thiamin 0.582 mg.[4]
Same, 55% extraction	Thiamin 0.980 mg.[4]
Same, 62% extraction	Thiamin 0.918 mg.[4]
Wheat bran	Niacin 33 mg.[5]
Wheat germ	Niacin 6.8 mg.[5] Pantothenic Acid 1.53 mg.[6] Pyridoxine 0.96 mg.[6]
Wheat, whole	Thiamin 0.467 to 0.560 mg.[4] Niacin 7.0 mg.[5] Alpha-Tocopherol 2.3 to 5.4 mg.[1]
Wheat, dark, hard winter	Pantothenic Acid 1.29 mg.[6] Pyridoxine 0.41 mg.[6]
Wheat, soft, red winter	Pantothenic Acid 1.15 mg.[6] Pyridoxine 0.37 mg.[6]
Wheat, soft, white winter	Pantothenic Acid 1.11 mg.[6] Pyridoxine 0.47 mg.[6]
Wheat, dark, northern spring	Pantothenic Acid 1.37 mg.[6] Pyridoxine 0.47 mg.[6]
Wheat, hard, white spring	Pantothenic Acid 1.32 mg.[6] Pyridoxine 0.49 mg.[6]
Wheat, soft, white spring	Pantothenic Acid 1.19 mg.[6] Pyridoxine 0.49 mg.[6]
Wheat, "White Club"	Pantothenic Acid 1.14 mg.[6] Pyridoxine 0.45 mg.[6]
Wheat, Canadian, hard, red spring	Thiamin 0.22 to 0.80; 0.393 mg.[7]
Flour	
White	Niacin 0.95 to 1.31 mg.[8]
White, patent	Niacin 1.2 mg.[5] Pantothenic Acid 0.57 mg.[6] Pyridoxine 0.22 mg.[6]
Whole wheat	Niacin 6.1 to 7.1 mg.[8] Pantothenic Acid 1.33 mg.[6] Pyridoxine 0.46 mg.[6]
Wheat, stone-milled, three mills, 50% extraction	Thiamin 0.404 mg.[4]
Same, 55% extraction	Thiamin 0.474 mg.[4]
Same, 62% extraction	Thiamin 0.452 mg.[4]
Bread, etc.	
White	Ca 0.060 gm.[2] P 0.114 gm.[2] Thiamin 0.047 mg.[3]
Whole wheat	Ca 0.064 gm.[2] P 0.217 gm.[2] Thiamin 0.218 mg.[3]
Rye, pumpernickel	Thiamin 0.170 mg.[3]
Graham cracker	Ca 0.046 gm.[2] P 0.157 gm.[2]

II. Fruits (including Fruit Juices)

Apples, raw, E.P., unpeeled	Ca 0.006 gm.[2] P 0.013 gm.[2]
Apples, raw, E.P.	Thiamin 0.019 mg.[3]
Apples, "Newton," raw	Ascorbic Acid 7 mg.[9]
Apple sauce	Thiamin 0.012 mg.[3]
Apricots, dried, sulfured	Thiamin 0.021 mg.[10] Riboflavin 0.163 mg.[10]
Bananas, raw, E.P.	Ca 0.005 gm.[2] P 0.028 gm.[2] Thiamin 0.154 mg.[3] Ascorbic Acid 11 mg.[11]
Blackberries, raw, E.P.	Thiamin 0.022 mg.[3]
Cantaloupe, raw, E.P.	Thiamin 0.048 mg.[3]
Dates, "Deglet Noors"	Thiamin 0.053; 0.052 mg.[10] Riboflavin 0.030; 0.040 mg.[10]
Grapefruit, seeded	Thiamin 0.035 mg.[12**] Riboflavin 0.012 mg.[12]
Grapefruit, seedless	Thiamin 0.032 mg.[12**] Riboflavin 0.011 mg.[12]
Grapes, raw, E.P.	Thiamin 0.067 mg.[3]
Guavas, hardripe, raw	Ascorbic Acid 250 to 425 mg.[15]
Guavas, canned	Ascorbic Acid 250 mg.[15]
Melon, "Honeydew," raw, E.P.	Thiamin 0.046 mg.[3]
Peaches, raw, E.P.	Thiamin 0.014 mg.[3]
Prunes, dried, E.P.	Thiamin 0.124 mg.[10] Riboflavin 0.127 mg.[10]
Prunes, raw, E.P.	Thiamin 0.039 to 0.051 mg.[3]
Prunes, cooked in minimum amount of water	Thiamin 0.025 mg.[3]
Same, cooked in large amount of water	Thiamin 0.018 mg.[3]
Raisins, raw, E.P.	Thiamin 0.106 mg.[3]
Rhubarb, "Victoria," raw, center of stalk	Ascorbic Acid 3.4 mg.[17]
Rhubarb, hothouse grown, raw, stem end of stalk	Ascorbic Acid 4.2 mg.[17]
Same, leaf end of stalk	Ascorbic Acid 5.9 mg.[17]
Rhubarb, field grown, raw, center of stalk	Ascorbic Acid 6.1 mg.[17]
Same, stem end of stalk	Ascorbic Acid 6.9 mg.[17]
Same, leaf end of stalk	Ascorbic Acid 9.6 mg.[17]
Rhubarb, "Victoria," hothouse grown, cooked (includes sugar and water in 100 gm. wt.)	Ascorbic Acid 2.4 mg.[17]
Rhubarb, field grown, cooked (includes sugar and water in 100 gm. wt.)	Ascorbic Acid 4.5 mg.[17]
Rhubarb, "Wine," hothouse grown, raw, center of stalk	Ascorbic Acid 5.4 mg.[17]
Same, stem end of stalk	Ascorbic Acid 3.9 mg.[17]
Same, leaf end of stalk	Ascorbic Acid 7.9 mg.[17]
Rhubarb, field grown, raw, center of stalk	Ascorbic Acid 10.7 mg.[17]
Same, stem end of stalk	Ascorbic Acid 9.7 mg.[17]
Same, leaf end of stalk	Ascorbic Acid 15.5 mg.[17]
Rhubarb, "Wine," hothouse grown, cooked, (includes sugar and water in 100 gm. wt.)	Ascorbic Acid 5.0 mg.[17]
Rhubarb, field grown, cooked (includes sugar and water in 100 gm. wt.)	Ascorbic Acid 4.3 mg.[17]

*Values given are for 100 grams of food except where otherwise indicated by reference symbols to footnotes. A range of values is indicated thus: 0.34 to 0.84. More than one value reported separately is indicated thus: 3.4; 4.7. Superior symbols refer to footnotes at end of table. Superior figures refer to original sources of stated values (*see* references at end of table).

RECENT FIGURES ON MINERAL AND VITAMIN VALUES OF FOODS (*Cont'd*)

Strawberries, frozen, raw...	Thiamin 0.021 mg.[3]
Strawberries, "Klondike," raw, sun-ripened.....	Ascorbic Acid 45 to 47 mg.[18]
Same, shade-ripened....	Ascorbic Acid 41 to 43 mg.[18]
Same, densely shaded...	Ascorbic Acid 36 mg.[18]
Same, very green.....	Ascorbic Acid 23 to 24 mg.[18]
Same, pink green.....	Ascorbic Acid 31 to 32 mg.[18]
Same, ripe.....	Ascorbic Acid 46 to 47 mg.[18]
Strawberries, "Fairmore," raw.....	Ascorbic Acid 66 mg.[18]
Strawberries, "Missionary," raw.....	Ascorbic Acid 46 mg.[18]
Strawberries, "Massey," raw.....	Ascorbic Acid 41 to 42 mg.[18]
Strawberries, "Blackmore," raw.....	Ascorbic Acid 32 to 33 mg.[18]
Tangerines, raw.....	Thiamin 0.069 mg.[12**]
Watermelon, raw, E.P....	Thiamin 0.027 mg.[3]
Apple juice, "Newton," raw.....	Ascorbic Acid 7 mg.[9]
Same, 48 hours old.....	Ascorbic Acid 4.9 mg.[9]
Same, commercially-canned, 2 weeks old...	Ascorbic Acid 0.2 mg.[9]
Grapefruit juice, raw.....	Ascorbic Acid 41.2; 38.3 to 46.4 mg.[13]
Grapefruit juice, canned...	Ascorbic Acid 33.7; 26.3 to 39.0 mg.[13]
Grapefruit juice, canned...	Ascorbic Acid 30 to 34 mg.[14]
Orange juice, raw.....	Ca 0.011 gm.[2] P 0.015 gm.[2] Thiamin 0.067 mg.[3]
Orange juice, "Pineapple," size #176, raw.....	Thiamin 0.065 mg.[12] Riboflavin 0.016 mg.[12]
Orange juice, "Valencia," size #176, raw.....	Thiamin 0.070 mg.[12] Riboflavin 0.015 mg.[12]
Orange juice, "Sunkist," raw.....	Ascorbic Acid 67 to 77 mg.[16]
Same, stored at room temperature 24 hours..	Ascorbic Acid 63 mg.[16]
Same, stored at refrigerator temperature 24 hours.....	Ascorbic Acid 67 to 71 mg.[16]
Orange juice, canned.....	Ca 0.012 gm.[2] P 0.024 gm.[2]
Tomato juice, canned.....	Ca 0.003 gm.[2] P 0.017 gm.[2] Ascorbic Acid 12 mg.[14]

III. VEGETABLES (including Vegetable Juices)

Asparagus, raw.....	Thiamin 0.219 mg.[10] Riboflavin 0.113 mg.[10]
Asparagus, blanched.....	Thiamin 0.260 mg.[10] Riboflavin 0.118 mg.[10]
Asparagus, canned.....	Thiamin 0.097 mg.[3]
Beans, broad, raw.....	Ascorbic Acid 37.7 mg.[19]
Same, water-blanched 1 minute.....	Ascorbic Acid 30.9 mg.[19]
Same, water-blanched 3 minutes.....	Ascorbic Acid 27.1 mg.[19]
Same, water-blanched 6 minutes.....	Ascorbic Acid 24.9 mg.[19]
Same, steam-blanched 3 minutes.....	Ascorbic Acid 32.0 mg.[19]
Beans, green snap, raw....	Thiamin 0.044; 0.094 mg.[3]
Same, boiled.....	Thiamin 0.012; 0.039 mg.[3]
Beans, green snap, "Bountiful," raw.....	Thiamin 0.063 mg.[20] Riboflavin 0.132 mg.[20] Ascorbic Acid 26.5 mg.[20]
Same, canned in tin.....	Thiamin 0.054 mg.[20] Riboflavin 0.132 mg.[20] Ascorbic Acid 4.0 to 5.0 mg.[20]
Same, canned in glass (stored 30 days, solid portion only).....	Thiamin 0.054 mg.[20] Riboflavin 0.132 mg.[20] Ascorbic Acid 2.0 to 2.5 mg.[20]
Same, canned in glass (stored 30 days, liquid portion only).....	Thiamin 0.021 mg.[20] Riboflavin 0.036 mg.[20] Ascorbic Acid 2.0 to 2.5 mg.[20]
Same, canned in glass (at *pH* 5.3).....	Thiamin 0.054 mg.[20] Riboflavin 0.084 mg.[20] Ascorbic Acid 4.3 mg.[20]
Same, canned in glass (at *pH* 4.2).....	Thiamin 0.060 mg.[20] Riboflavin 0.084 mg.[20] Ascorbic Acid 5.0 mg.[20]
Same, canned in glass, head space 1½ inches...	Thiamin 0.054 mg.[20] Riboflavin 0.087 mg.[20] Ascorbic Acid 4.0 mg.[20]
Same, blanched, dehydrated, stored in glass.	Thiamin 0.981 mg.[20] Riboflavin 2.019 mg.[20] Ascorbic Acid 15.0 mg.[20]
Same, blanched, quick-frozen.....	Thiamin 0.077 mg.[20] Riboflavin 0.156 mg.[20] Ascorbic Acid 14.5 mg.[20]
Same, not blanched, quick-frozen.....	Thiamin 0.057 mg.[20] Riboflavin 0.144 mg.[20] Ascorbic Acid 6.5 mg.[20]
Beans, string, whole, raw.	Ascorbic Acid 18.6 mg.[19]
Same, water-blanched 1 minute.....	Ascorbic Acid 17.3 mg.[19]
Same, water-blanched 3 minutes.....	Ascorbic Acid 16.4 mg.[19]
Same, water-blanched 6 minutes.....	Ascorbic Acid 15.3 mg.[19]
Same, steam-blanched 3 minutes.....	Ascorbic Acid 15.3 mg.[19]
Beans, string, sliced, raw..	Ascorbic Acid 19.2 mg.[19]
Same, water-blanched 1 minute.....	Ascorbic Acid 12.7 mg.[19]
Same, water-blanched 3 minutes.....	Ascorbic Acid 10.4 mg.[19]
Same, water-blanched 6 minutes.....	Ascorbic Acid 8.4 mg.[19]
Same, steam-blanched 3 minutes.....	Ascorbic Acid 12.3 mg.[19]
Beans, Lima, canned, then boiled.....	Thiamin 0.032 mg.[3]
Beans, Lima, quick-frozen, raw.....	Ascorbic Acid 20 mg.[21]
Same, boiled (in small amount of water).....	Ascorbic Acid 16.0 to 17.2 mg.[21]
Same, boiled (in moderate amount of water)..	Ascorbic Acid 10.4 to 14.0 mg.[21]
Same, boiled (in large amount of water).....	Ascorbic Acid 9.2 to 10.0 mg.[21]
Beans, runner, sliced, not blanched.....	Ascorbic Acid 22.8 mg.[19]
Same, water-blanched 1 minute.....	Ascorbic Acid 14.8 mg.[19]

RECENT FIGURES ON MINERAL AND VITAMIN VALUES OF FOODS (*Cont'd*)

Same, water-blanched 3 minutes	Ascorbic Acid 12.3 mg.[19]
Same, water-blanched 6 minutes	Ascorbic Acid 10.5 mg.[19]
Beans, runner, steam-blanched 3 minutes	Ascorbic Acid 16.0 mg.[19]
Beets, raw	Thiamin 0.025 mg.[3]
Beets, boiled	Thiamin 0.002 mg.[3]
Broccoli, raw	Thiamin 0.077 mg.[10] Riboflavin 0.079 mg.[10]
Broccoli, dehydrated	Thiamin 0.371; 0.397; 0.725 mg.[10] Riboflavin 0.430; 0.716; 1.340 mg.[10]
Brussels sprouts, raw	Ascorbic Acid 63;[21] 112 mg.[19]
Same, water-blanched 1 minute	Ascorbic Acid 77.3 mg.[19]
Same, water-blanched 3 minutes	Ascorbic Acid 76.2 mg.[19]
Same, water-blanched 6 minutes	Ascorbic Acid 58.2 mg.[19]
Same, steam-blanched 3 minutes	Ascorbic Acid 99.7 mg.[19]
Brussels sprouts, quick-frozen, cooked	Ascorbic Acid 51 mg.[21]
Cabbage, raw	Ca 0.044 gm.[2] P 0.016 gm.[2] Thiamin 0.037 mg.[3]
Cabbage, boiled	Thiamin 0.018 mg.[3]
Cabbage, grated, time of standing, 0	Ascorbic Acid 50 mg.[22]
Same, time of standing, 5 minutes	Ascorbic Acid 34 mg.[22]
Same, time of standing, 3 hours	Ascorbic Acid 31 mg.[22]
Cabbage, shredded, time of standing, 0	Ascorbic Acid 50 mg.[22]
Same, time of standing, 5 minutes	Ascorbic Acid 48 mg.[22]
Same, time of standing, 3 hours	Ascorbic Acid 44 mg.[22]
Cabbage, cut with sharp knife, time of standing, 0	Ascorbic Acid 50 mg.[22]
Same, time of standing, 5 minutes	Ascorbic Acid 48 mg.[22]
Same, time of standing, 3 hours	Ascorbic Acid 48 mg.[22]
Cabbage, raw, outer green leaves	Ascorbic Acid 85.7; 63.0; 104.6 mg.[23]
Same, curled green leaves	Ascorbic Acid 68.9; 49.4; 55.2 mg.[23]
Same, white leaves	Ascorbic Acid 45.2; 46.0; 32.5 mg.[23]
Same, heart leaves	Ascorbic Acid 78.0; 65.7; 55.0 mg.[23]
Same, core	Ascorbic Acid 77.9; 66.3; 56.7 mg.[23]
Cabbage, dried without blanching, uncooked	Ascorbic Acid 332.5 mg.[23]
Same, cooked after soaking 30 minutes (solid portion only)	Ascorbic Acid 41.8 mg.[23]
Same, cooked after soaking 30 minutes (cooking water only)	Ascorbic Acid 63.3 mg.[23]
Cabbage, dried after blanching, uncooked	Ascorbic Acid 406.7 mg.[23]
Same, cooked after soaking 30 minutes (solid portion only)	Ascorbic Acid 68.4 mg.[23]
Same, cooked after soaking 30 minutes (cooking water only)	Ascorbic Acid 117.4 mg.[23]
Carrots, raw, tips	Ascorbic Acid 8.6 mg.[23]
Same, middle portion	Ascorbic Acid 8.6 mg.[23]
Same, butt end	Ascorbic Acid 11.6 mg.[23]
Carrots, raw	Ca 0.026 gm.[2] P 0.030 gm.[2] Vitamin A 9.79 I.U.[24]† Thiamin 0.076 mg.[3] Ascorbic Acid 6.0 mg.[11]
Carrots, frozen 65 days	Vitamin A 9.69 I.U.[24]†
Carrots, shriveled, left in paper bag 79 days	Vitamin A 9.55 I.U.[24]†
Carrots, boiled	Thiamin 0.027 mg.[3] Ascorbic Acid 6.0 mg.[11]
Cauliflower, raw, outer leaves	Ascorbic Acid 83.9 mg.[23]
Same, outer flowers	Ascorbic Acid 65.2 mg.[23]
Same, stalks of outer flowers	Ascorbic Acid 63.8 mg.[23]
Same, inner flowers	Ascorbic Acid 48.0 mg.[23]
Same, stalks of inner flowers	Ascorbic Acid 70.5 mg.[23]
Cauliflower, dried without blanching, uncooked	Ascorbic Acid 289.8 mg.[23]
Same, cooked after soaking 30 minutes (solid portion only)	Ascorbic Acid 17.3 mg.[23]
Same, cooked after soaking 30 minutes (cooking water only)	Ascorbic Acid 20.7 mg.[23]
Cauliflower, dried after blanching, uncooked	Ascorbic Acid 462.0 mg.[23]
Same, cooked after soaking 30 minutes (solid portion only)	Ascorbic Acid 64.2 mg.[23]
Same, cooked after soaking 30 minutes (cooking water only)	Ascorbic Acid 62.1 mg.[23]
Cauliflower, quick-frozen, uncooked	Ascorbic Acid 63.0 mg.[21]
Same, boiled (in small amount of water)	Ascorbic Acid 52.9 mg.[21]
Same, boiled (in moderate amount of water)	Ascorbic Acid 39.7 mg.[21]
Same, boiled (in large amount of water)	Ascorbic Acid 41.0 mg.[21]
Corn, sweet, raw	Ascorbic Acid 8.0 mg.[11]
Corn, canned	Thiamin 0.026 mg.[3]
Cowpeas, "Groit," young (before extensive purple mottling in seed coat)	Ascorbic Acid 40 mg.[11]
Eggplant, raw	Thiamin 0.053 mg.[3]
Eggplant, baked	Thiamin 0.072 mg.[3]
Kale, raw	Ascorbic Acid 206 to 235 mg.[11]
Kale, cooked 5 minutes in boiling water	Ascorbic Acid 185 to 236 mg.[11]
Kale, dried, (range of values due to temperatures used)	Ascorbic Acid 170 to 295 mg.[23]
Kohlrabi, raw	Ascorbic Acid 61 mg.[25]
Lettuce, raw	Ca 0.016 gm.[2] P 0.020 gm.[2] Thiamin 0.057 mg.[3]
Onions, raw	Thiamin 0.027 mg.[3]
Onions, boiled, cooking water included	Thiamin 0.017 mg.[3]

RECENT FIGURES ON MINERAL AND VITAMIN VALUES OF FOODS (*Cont'd*)

Parsley, raw, whole	Ascorbic Acid 250 to 333 mg.[26]
Same, stalks only	Ascorbic Acid 66.4 mg.[26]
Same, chopped (30 minutes to 3 hours after chopping)	Ascorbic Acid 200 to 222 mg.[26]
Parsnips, "Hollow Crown," raw, stored 0 to 3 months	Ascorbic Acid 15 to 30 mg.[27]
Same, stored 4 to 5 months	Ascorbic Acid 7 to 18 mg.[27]
Parsnips, "Hollow Crown," raw	Ascorbic Acid 20 mg.[27]
Same, boiled, whole, unpeeled	Ascorbic Acid 18 mg.[27]
Parsnips, "Hollow Crown," raw	Ascorbic Acid 22 mg.[27]
Same, boiled, peeled, cut in pieces lengthwise	Ascorbic Acid 18 mg.[27]
Parsnips, "Hollow Crown," raw	Ascorbic Acid 12 mg.[27]
Same, boiled, cut in ⅛–¼-inch crosswise slices	Ascorbic Acid 10 mg.[27]
Parsnips, "Hollow Crown," raw	Ascorbic Acid 17 mg.[27]
Same, steamed, whole, unpeeled	Ascorbic Acid 15 mg.[27]
Parsnips, "Hollow Crown," raw	Ascorbic Acid 20 mg.[27]
Same, steamed, peeled, cut in pieces lengthwise	Ascorbic Acid 17 mg.[27]
Parsnips, "Hollow Crown," raw	Ascorbic Acid 20 mg.[27]
Same, cooked in pressure-cooker, underdone	Ascorbic Acid 19 mg.[27]
Parsnips, "Hollow Crown," raw	Ascorbic Acid 25 mg.[27]
Same, cooked in pressure-cooker, done	Ascorbic Acid 23 mg.[27]
Parsnips, "Hollow Crown," raw	Ascorbic Acid 21 mg.[27]
Same, cooked in pressure-cooker, overdone	Ascorbic Acid 16 mg.[27]
Peas, raw	Ca 0.022 gm.[2] P 0.114 gm.[2] Thiamin 0.12; 0.09 mg.[10] Riboflavin 0.067; 0.072 mg.[10] Ascorbic Acid 25 mg.[28]
Peas, cooked	Thiamin 0.10 mg.[10] Riboflavin 0.078 mg.[10] Ascorbic Acid 20 mg.[28]
Peas, canned, liquor discarded	Thiamin 0.11 mg.[3]
Peas, dehydrated	Thiamin 0.42; 0.44 mg.[10] Riboflavin 0.48; 0.57 mg.[10]
Peas, dried	Thiamin 0.61 mg.[3]
Same, boiled	Thiamin 0.11 mg.[3]
Peas, quick-frozen	Ascorbic Acid 12 to 23[28]; 21 mg.[21]
Peas, "Thomas Laxton," quick-frozen, raw	Ascorbic Acid 17 mg.[28]
Same, cooked	Ascorbic Acid 14 mg.[28]
Peas, quick-frozen, boiled (in small amount of water)	Ascorbic Acid 13.9 to 16.4 mg.[21]‡
Same (in moderate amount of water)	Ascorbic Acid 12.4 mg.[21]‡
Same (in large amount of water)	Ascorbic Acid 10.9 to 11.1 mg.[21]‡
Potatoes, peeled, raw	Ca 0.008 gm.[2] P 0.060 gm.[2] Thiamin 0.084 mg.[3] Ascorbic Acid 15.8 mg.[30]
Same, boiled (cooking water discarded)	Thiamin 0.050 mg.[3]
Potatoes, whole, unpeeled, boiled	Ascorbic Acid 9.9 mg.[30]
Same, baked	Ascorbic Acid 8.1 mg.[30]
Potatoes, "Green Mountain," raw	Ascorbic Acid 18 mg.[11]
Same, stored 180 days	Ascorbic Acid 10 mg.[30]
Same, baked	Ascorbic Acid 6.9 mg.[30]
Same, peeled, cut in halves, then boiled	Ascorbic Acid 5.3 mg.[30]
Same, peeled, sliced, then boiled	Ascorbic Acid 4.0 mg.[30]
Same, boiled whole	Ascorbic Acid 7.3 mg.[30]
Same, boiled whole, cold	Ascorbic Acid 2.6 mg.[30]
Same, boiled, then creamed	Ascorbic Acid 2.0 mg.[30]
Same, boiled, then fried	Ascorbic Acid 2.1 mg.[30]
Same, boiled, then mashed	Ascorbic Acid 4.6 mg.[30]
Same, French-fried	Ascorbic Acid 6.7 mg.[30]
Same, scalloped	Ascorbic Acid 3.6 mg.[30]
Potatoes, "New York State Smooth Rural," peeled	Fe 0.81 mg.[31]
Same, baked, peeled after cooking	Fe 0.89 mg.[31]
Potatoes, "New York State Smooth Rural," boiled, peeled after cooking	Fe 0.78 mg.[31]
Same, peeled, then started in boiling water	Fe 0.69 mg.[31]
Same, peeled, cut in quarters, then started in boiling water	Fe 0.72 mg.[31]
Same, peeled, soaked 6 hours, started in cold water, whole	Fe 0.69 mg.[31]
Potatoes, "New York State Smooth Rural," peeled, steamed	Fe 0.82 mg.[31]
Potatoes, dried, 7 months after drying	Ascorbic Acid 49 mg.[23]
Potatoes, stored 0 days	Ascorbic Acid 12 to 25 mg.[30]
Potatoes, stored 5 months at 36° F.	Ascorbic Acid 6.7 to 13 mg.[30]
Potatoes, stored 5 months at 40° to 50° F.	Ascorbic Acid 6.6 to 12 mg.[30]
Pumpkin, canned	Thiamin 0.016 mg.[3]
Radishes, E.P.	Thiamin 0.020 mg.[3]
Sauerkraut, raw, solid portion only	Thiamin 0.034 mg.[3]
Sauerkraut, steamed	Thiamin 0.015 mg.[3]
Soybeans, "Nanda," immature (edible stage), raw	Ascorbic Acid 34.4 mg.[11]
Same, cooked	Ascorbic Acid 34.2 mg.[11]
Soybeans, "Rokusum," immature (edible stage), raw	Ascorbic Acid 32 mg.[11]
Soybeans, mature, raw	Choline 0.340 gm.[32]
Spinach, raw, E.P.	Vitamin A 5.53 I.U.[24]† Thiamin 0.100 mg.[3] Ascorbic Acid 66[14]; 79 mg.[11]
Same, boiled	Thiamin 0.036 mg.[3] Ascorbic Acid 71 mg.[11]
Spinach, canned	Ca 0.053 gm.[2] P 0.344 gm.[2]

RECENT FIGURES ON MINERAL AND VITAMIN VALUES OF FOODS (*Cont'd*)

Spinach, dehydrated	Thiamin 1.02 mg.[10] Riboflavin 1.86 mg.[10]
Spinach, quick-frozen	Vitamin A 5.5 I.U.[24]† Ascorbic Acid 32 mg.[21]
Same, boiled	Ascorbic Acid 21.1 to 25.3 mg.[21]
Spinach, wilted	Vitamin A 5.28 I.U.[24]†
Squash, summer, "Early White Bush" ("White Patty Pan"), garden-fresh, raw	Ascorbic Acid 29 mg.[33]
Same, cut in ½-inch cubes, boiled 10 minutes	Ascorbic Acid 17; 18 mg.[33]
Same, cut in ½-inch cubes, boiled 20 minutes (overdone)	Ascorbic Acid 14 mg.[33]
Same, cut in ½-inch cubes, boiled 30 minutes (overdone)	Ascorbic Acid 13 mg.[33]
Same, cut in ½-inch cubes, boiled 3 minutes, then sautéd in bacon fat 10 minutes	Ascorbic Acid 7 mg.[33]
Same, whole, boiled 20 minutes	Ascorbic Acid 17 mg.[33]
Same, whole, boiled 5 minutes, then baked 20 minutes	Ascorbic Acid 10 mg.[33]
Same, whole, boiled 5 minutes, then stuffed and baked 20 minutes	Ascorbic Acid 9 mg.[33]
Squash, summer, "Early White Bush" ("White Patty Pan"), stored in open market 8 hours, raw	Ascorbic Acid 23 mg.[33]
Same, cut in ½-inch cubes, boiled 10 minutes (overdone)	Ascorbic Acid 14; 15 mg.[33]
Same, cut in ½-inch cubes, boiled 20 minutes (overdone)	Ascorbic Acid 10 mg.[33]
Same, cut in ½-inch cubes, boiled 30 minutes (overdone)	Ascorbic Acid 9 mg.[33]
Same, cut in ½-inch cubes, boiled 3 minutes, then sautéd in bacon fat 10 minutes	Ascorbic Acid 5 mg.[33]
Same, whole, boiled 20 minutes	Ascorbic Acid 13 mg.[33]
Same, whole, boiled 5 minutes, then baked 20 minutes	Ascorbic Acid 8 mg.[33]
Same, whole, boiled 5 minutes, then stuffed and baked 20 minutes	Ascorbic Acid 6 mg.[33]
Squash, summer, "Early White Bush" ("White Patty Pan"), stored in open market at room temperature 4 days, raw	Ascorbic Acid 13 mg.[33]
Same, cut in ½-inch cubes, boiled 10 minutes (overdone)	Ascorbic Acid 8 mg.[33]
Same, cut in ½-inch cubes, boiled 20 minutes (overdone)	Ascorbic Acid 6 mg.[33]
Same, cut in ½-inch cubes, boiled 30 minutes (overdone)	Ascorbic Acid 5 mg.[33]
Same, cut in ½-inch cubes, boiled 3 minutes, then sautéd in bacon fat 10 minutes	Ascorbic Acid 3 mg.[33]
Same, whole, boiled 20 minutes	Ascorbic Acid 7 mg.[33]
Same, whole, boiled 5 minutes, then baked 20 minutes	Ascorbic Acid 5 mg.[33]
Same, whole, boiled 5 minutes, stuffed, then baked 20 minutes	Ascorbic Acid 4 mg.[33]
Squash, summer, "Yellow Crookneck," garden-fresh, raw	Ascorbic Acid 30 mg.[33]
Same, sliced, boiled 10 minutes	Ascorbic Acid 17; 18 mg.[33]
Same, sliced, boiled 20 minutes (overdone)	Ascorbic Acid 14 mg.[33]
Same, sliced, boiled 30 minutes (overdone)	Ascorbic Acid 13 mg.[33]
Same, sliced, boiled 3 minutes, then sautéd in bacon fat 10 minutes	Ascorbic Acid 7 mg.[33]
Same, whole, boiled 20 minutes	Ascorbic Acid 17 mg.[33]
Squash, summer, "Yellow Crookneck," garden-fresh, stored in open market 8 hours, raw	Ascorbic Acid 22 mg.[33]
Same, sliced, boiled 10 minutes	Ascorbic Acid 13; 14 mg.[33]
Same, sliced, boiled 20 minutes (overdone)	Ascorbic Acid 11 mg.[33]
Same, sliced, boiled 30 minutes (overdone)	Ascorbic Acid 10 mg.[33]
Same, sliced, boiled 3 minutes, then sautéd in bacon fat 10 minutes	Ascorbic Acid 6 mg.[33]
Same, whole, boiled 20 minutes	Ascorbic Acid 13 mg.[33]
Sweet potato, raw, E.P.	Thiamin 0.109 mg.[3]
Sweet potato, baked	Thiamin 0.041 mg.[3]
Sweet potato, "Puerto Rico," raw, at harvest	Vitamin A 5.10 I.U.[34]†
Same, 1 month after harvest	Vitamin A 7.53 I.U.[34]†
Same, 2 months after harvest	Vitamin A 8.19 I.U.[34]†
Same, 3 months after harvest	Vitamin A 8.02 I.U.[34]†
Tomato, raw, E.P.	Thiamin 0.042 mg.[3]
Tomato, canned	Thiamin 0.054 mg.[3]
Tomato, "Bestal," raw, green	Ascorbic Acid 15.0 mg.[35]
Same, ripe	Ascorbic Acid 19.5 mg.[35]
Tomato, "Best of All," raw, green	Ascorbic Acid 16.0 mg.[35]
Same, ripe	Ascorbic Acid 22.0 mg.[35]
Tomato, "Comet," raw, green	Ascorbic Acid 16.0 mg.[35]
Same, ripe	Ascorbic Acid 23.0 mg.[35]
Tomato, "Penn State" ("Earliana"), raw, green	Ascorbic Acid 13.0 mg.[35]
Same, ripe	Ascorbic Acid 17.5 mg.[35]
Turnip, raw, E.P.	Thiamin 0.051 mg.[3]
Turnip, boiled, cooking water discarded	Thiamin 0.038 mg.[3]

RECENT FIGURES ON MINERAL AND VITAMIN VALUES OF FOODS *(Cont'd)*

IV. MILK AND MILK PRODUCTS

Milk, cow's	
Whole, fresh	Ca 0.188 gm.[2]
	P 0.090 gm.[2]
Same, evaporated	Ca 0.253 gm.[2]
	P 0.209 gm.[2]
Same, dried, uncooked	Thiamin 0.276 mg.[3]
Skim, dried	Thiamin 0.357 mg.[37]
	Riboflavin 2.09 mg.[37]
Milk, ewe's	
Whole	Ascorbic Acid 0.38 to 1.77 mg.[38]
Colostrum	Ascorbic Acid 1.77 mg.[38]
Butterfat, cow's	
"Guernsey"	Vitamin A 2880; 2920; 3260 I.U.[39]§
"Holstein"	Vitamin A 2250; 2290; 2780 I.U.[39]§
Cheese	
"American Cheddar"	Thiamin 0.042 mg.[3]
Processed, "Velveeta"	Ca 0.565 gm.[2]
	P 0.875 gm.[2]

V. MEATS, POULTRY, FISH AND EGGS

Meats	
Bacon, raw	Thiamin 0.274 mg.[3]
Same, fried	Thiamin 0.093 mg.[3]
Beef, raw	Ca 0.010 gm.[2]
	P 0.148 gm.[2]
	Niacin 4.0 to 8.2 mg.[40]¶
Beef, chuck, raw, E.P.	Thiamin 0.063 mg.[3]
Same, roasted, including juices	Thiamin 0.057 mg.[3]
Beef, plate, raw, E.P.	Thiamin 0.033 mg.[3]
Same, boiled, cooking water included	Thiamin 0.018 mg.[3]
Beef, round, raw, E.P.	Thiamin 0.051 mg.[3]
	Niacin 5.0 to 5.8 mg.[40]¶
Same, roasted	Thiamin 0.044 mg.[3]
Lamb muscle meats, raw	Niacin 5.4 to 10.2 mg.[40]¶
Mutton, breast, raw, E.P.	Thiamin 0.082 mg.[3]
Same, roasted	Thiamin 0.113 mg.[3]
Pork chop, loin, raw, E.P.	Thiamin 1.484 mg.[3]
Same, baked	Thiamin 0.876 mg.[3]
Pork, ham, raw, E.P.	Thiamin 1.181 mg.[3]
	Niacin 2.4 to 9.0 mg.[40]¶
Same, fried	Thiamin 0.852 mg.[3]
Pork, muscle meats, raw	Niacin 4.1 to 10.2 mg.[40]¶
Pork, shoulder, raw, E.P.	Thiamin 1.051 mg.[3]
Same, roasted	Thiamin 0.875 mg.[3]
Rabbit, leg, raw	Niacin 12.6 to 12.9 mg.[40]
Veal, chuck, raw, E.P.	Thiamin 0.073 mg.[3]
Same, stewed, cooking water included	Thiamin 0.021 mg.[3]
Veal, muscle meats, raw	Niacin 4.9 to 9.1 mg.[40]¶
Head cheese, raw	Thiamin 0.058 mg.[3]
Heart, beef, raw	Niacin 8.1 mg.[40]
Heart, lamb, raw	Niacin 5.8 to 7.2 mg.[40]¶
Kidney, beef, raw	Niacin 6.5 to 8.6 mg.[40]
Kidney, lamb, raw	Niacin 9.3 to 9.6 mg.[40]
Kidney, rabbit, raw	Niacin 13.0 to 16.2 mg.[40]
Kidney, veal, raw	Niacin 8.3 to 10.0 mg.[40]
Liver, beef, raw	Thiamin 0.228 mg.[3]
	Niacin 7.6 to 14.3 mg.[40]
Same, fried	Thiamin 0.262 mg.[3]
Same, dried	Choline 2.378 gm.[32]
Liver, pork	Niacin 9.7 to 16.6 mg.[40]¶
Same, dried	Choline 2.185 gm.[32]
Liver, rabbit, raw	Niacin 21.5 to 22.1 mg.[40]
Liver, veal, raw	Niacin 11.5 to 13.6 mg.[40]
Poultry	
Chicken, raw, E.P.	Thiamin 0.080 mg.[3]
Same, stewed, cooking water included	Thiamin 0.022 mg.[3]
Chicken, breast, raw	Niacin 11.0 to 18.1 mg.[40]¶
Chicken, leg, raw	Niacin 6.1 to 8.0 mg.[40]¶
Chicken, dark meat, raw	Ascorbic Acid 2.5 mg.[41]
Chicken, white meat, raw	Ascorbic Acid 1.0 mg.[41]
Chicken, commercially-canned	Ascorbic Acid 1.5 to 5.5 mg.[41]
Chicken, home-canned	Ascorbic Acid 2.6 to 6.1 mg.[41]
Chicken liver, raw	Niacin 11.4 to 17.8 mg.[40]
Fish	
Flounder, raw, E.P.	Thiamin 0.084 mg.[3]
Same, fried	Thiamin 0.075 mg.[3]
Haddock	Niacin 0.9 mg.[40]
Halibut, raw, E.P.	Thiamin 0.092 mg.[3]
	Niacin 3.0 mg.[40]
Same, baked	Thiamin 0.073 mg.[3]
Perch, raw	Niacin 1.7 mg.[40]
Scallop, raw	Niacin 1.4 mg.[40]
Trout, raw	Niacin 3.5 mg.[40]
Eggs	
Whole, raw, E.P.	Ca 0.042 gm.[2]
	P 0.165 gm.[2]
	Thiamin 0.103; 0.112 mg.[3]
Same, boiled	Thiamin 0.079 mg.[3]
Same, scrambled	Thiamin 0.093 mg.[3]

VI. NUTS

Almonds, unripe	Ascorbic Acid 20 mg.[43]
Hickory nuts, unripe	Ascorbic Acid 70 to 82 mg.[43]
Horse-chestnuts, unripe	Ascorbic Acid 3 to 20 mg.[43]
Peanuts, roasted	Thiamin 0.094 mg.[3]
Peanut butter	Ca 0.028 gm.[2]
	P 0.341 gm.[2]
Peanut meal	Choline 0.225 gm.[32]
Walnuts, unripe	Ascorbic Acid 410 to 1800 mg.[43]
Walnuts, "Tuglans regia," unripe	Ascorbic Acid 1460 to 1800 mg.[43]
Walnuts, pickled, green	Ascorbic Acid 1080 mg.[43]
Same, white	Ascorbic Acid 1070 mg.[43]
Wingnuts, unripe	Ascorbic Acid 440; 1540 mg.[43]

VII. MISCELLANEOUS

Beverages, alcoholic	
Ale	Thiamin 0.0082; 0.0011; 0.0029 mg.[44]††
	Riboflavin 0.034 mg.[44]††
	Niacin 0.817 mg.[44]††
	Pantothenic Acid 0.094 mg.[44]††
Beer	Thiamin 0.0027; 0.004; 0.0015 mg.[44]††
	Riboflavin 0.027 mg.[44]††
	Niacin 0.817 mg.[44]††
	Pantothenic Acid 0.102 mg.[44]††
Malt Tonic	Thiamin 0.0071; 0.00; 0.0486 mg.[44]††
	Riboflavin 0.048 mg.[44]††
	Niacin 1.49 mg.[44]††
	Pantothenic Acid 0.121 mg.[44]††
Beverages, "dairy"	
Orange, freshly prepared from canned orange concentrate reconstituted with tap water; sugar added	Ascorbic Acid 6 to 54 mg.[16]††

RECENT FIGURES ON MINERAL AND VITAMIN VALUES OF FOODS (*Cont'd*)

Same, stored 24 hours at room temperature	Ascorbic Acid 4 to 24 mg.[16]††
Orange, purchased ready prepared on open market	Ascorbic Acid 0 to 17 mg.[16]††
Grapefruit, "fresh," purchased ready prepared on open market	Ascorbic Acid 8 mg.[16]††
Same, stored 24 hours	Ascorbic Acid 2 mg.[16]††
Tomato, as purchased ready prepared	Ascorbic Acid 0.0 mg.[16]
Other miscel. items	
Broth, chicken, canned, open-kettle method	Ascorbic Acid 3.5 mg.[41]
Same, pressure method	Ascorbic Acid 12.7 mg.[41]
Catsup, tomato	Ascorbic Acid 5.5 to 11.1 mg.[45]
Chocolate	Thiamin 0.047 mg.[3]
Chutney, walnut and green tomato	Ascorbic Acid 410 mg.[42]
Honey, untreated	Thiamin 0.0084 mg.[46]
	Riboflavin 0.093 mg.[46]
	Niacin 87 mg.[46]
	Pantothenic Acid 0.176 mg.[46]
	Pyridoxine 0.402 mg.[46]
	Ascorbic Acid 2.7 mg.[46]
Honey, clarified	Thiamin 0.0054 mg.[46]
	Riboflavin 0.064 mg.[46]
	Niacin 46 mg.[46]
	Pantothenic Acid 0.097 mg.[46]
	Pyridoxine 0.316 mg.[46]
	Ascorbic Acid 1.9 mg.[46]
Honey	Thiamin 0.0022 to 0.0091 mg.[46]
	Riboflavin 0.035 to 0.137 mg.[46]
	Niacin 4 to 92 mg.[46]
	Pantothenic Acid 0.025 to 0.192 mg.[46]
	Pyridoxine 0.210 to 0.480 mg.[46]
	Ascorbic Acid 0.5 to 6.5 mg.[46]
Honey, Minnesota	Thiamin 0.0055 mg.[46]
	Riboflavin 0.061 mg.[46]
	Niacin 36 mg.[46]
	Pantothenic Acid 0.105 mg.[46]
	Pyridoxine 0.299 mg.[46]
	Ascorbic Acid 2.4 mg.[46]
Honey, foreign	Thiamin 0.0022 to 0.0091 mg.[46]
	Riboflavin 0.058 to 0.145 mg.[46]
	Niacin 4 to 94 mg.[46]
	Pantothenic Acid 0.050 to 0.150 mg.[46]
	Pyridoxine 0.240 to 0.460 mg.[46]
	Ascorbic Acid 1.3 to 2.8 mg.[46]
Jam, apricot	Ascorbic Acid 9 mg.[47]
Jam, walnut and black currant	Ascorbic Acid 520 mg.[42]
Marmalade, walnut	Ascorbic Acid 630 mg.[43]
Rose hips, species native to British Isles	Ascorbic Acid 80 to 1260 mg.[48]
Rose hips, species transplanted to British Isles	Ascorbic Acid 260 to 4800 mg.[48]
Rose hips, "Rosa multiflora japonica," grown in the United States	Ascorbic Acid 4 mg.[49]
Rose hips, "Rosa rugosa," grown in the United States	Ascorbic Acid 22 mg.[49]
Soybean meal	Choline 0.345 gm.[32]
Yeast, bakers'	Choline 0.461 gm.[32]
Yeast, brewers'	Choline 0.431 gm.[32]

** Calculated as thiamin chloride.

† Expressed as mg. carotene.

‡ Computed from percentage retention in solid portion reported by author.

§ For carotene values, *see* original article.

¶ For losses in cooking and variety of cuts, *see* original article.

†† Per 100 ml.

REFERENCES

[1] Cabell, C. A., and Ellis, N. R.: The vitamin E content of certain varieties of wheat, corn, grasses, and legumes as determined by rat assay. J. Nutrition 23: 633, 1942.

[2] Hummel, F. C., Shepherd, M. L., Galbraith, H., Williams, H. H., and Macy, I. G.: Chemical composition of twenty-two common foods and comparison of analytical with calculated values of diets. J. Nutrition 24: 41, 1942.

[3] Lane, R. L., Johnson, E., and Williams, R. R.: Studies of the average American diet. I. Thiamine content. J. Nutrition 23: 613, 1942.

[4] Schultz, A. S., Atkin, L., and Frey, C. N.: The thiamin content of wheat flour milled by the stone milling process. Cereal Chem. 19: 529, 1942.

[5] Andrews, J. S., Boyd, H. M., and Gortner, W. A.: Nicotinic acid content of cereals and cereal products. Indust. & Engin. Chem., Anal. Ed. 14: 663, 1942.

[6] Tepley, L. J., Strong, F. M., and Elvehjem, C. A.: B complex in wheat. J. Nutrition 24: 167, 1942.

[7] Johannson, H., and Rich, C. E.: The variability in the thiamin content of Western Canadian hard red spring wheat of the 1940 crop. Cereal Chem. 19: 308, 1942.

[8] Melnick, D.: Collaborative study of the applicability of microbiological and chemical methods to the determination of niacin (nicotinic acid) in cereal products. Cereal Chem. 19: 553, 1942.

[9] Strachen, C. C.: Factors influencing ascorbic acid retention in apple juice. Canadian Dept. of Agric. Pub. 732 (Tech. Bull. 40), 1942.

[10] Mackinney, G., and Sugihara, J. M.: Riboflavin estimation in fruits and vegetables. J. Am. Chem. Soc. 64: 1980, 1942.

[11] Reid, M. E.: Protection of ascorbic acid during its extraction from plant tissues. Food Research 7: 288, 1942.

[12] Bailey, M. I., and Thomas, A. W.: The thiamine and riboflavin contents of citrus fruits. J. Nutrition 24: 85, 1942.

[13] Floyd, W. W., and Fraps, G. S.: Ascorbic acid content of some canned grapefruit juices prepared under various processing conditions. Food Research 7: 382, 1942.

[14] Dunker, C. F., Fellers, C. R., and Esselen, W. B., Jr.: A comparison of four methods for determining vitamin C with a 25-day, weight-response bioassay. Food Research 7: 260, 1942.

[15] Goldberg, L., and Levy, L. F.: Antiscorbutic value of guavas. J. South African Chem. Inst. 25: 3, 1942.

[16] Clark, V., and Ohlson, M. A.: The ascorbic acid content of certain "dairy beverages." J. Am. Dietet. A. 18: 460, 1942.

[17] Todhunter, E. N.: The ascorbic acid (vitamin C) content of rhubarb. Proc. Am. Soc. Hort. Sci. 40: 437, 1942.

[18] Burkhart, L., and Lineberry, R. A.: Determination of vitamin C and its sampling variation in strawberries. Food Research 7: 332, 1942.

[19] Adam, W. B., Horner, G., and Stanworth, J.: Changes occurring during the blanching of vegetables. J. Soc. Chem. Ind. 61: 96, 1942.

[20] Farrell, K. T., and Fellers, C. R.: Vitamin content of green snap beans. Influence of freezing, canning and dehydration on the content of thiamine, riboflavin and ascorbic acid. Food Research 7: 171, 1942.

[21] McIntosh, J. A., Tressler, D. K., and Fenton, F.: Ascorbic acid content of five quick-frozen vegetables. J. Home Econ. 34: 314, 1942.

[22] Pyke, M.: Effect of shredding and grating on vitamin content of raw vegetables. Nature 149: 499, 1942.

[23] Beckley, V. A., and Notley, V. E.: The ascorbic acid content of dried vegetables. Biochem. J. 35: 1396, 1941.

[24] Benne, E. J.: Report on chlorophyl and carotene in plant tissue. J. Assoc. Off. Agric. Chem. 25: 573, 1942.

[25] Warne, L. G. G.: Kohlrabi as a source of vitamin C. Brit. Med. J. 1: 307, 1942.

[26] Morgan, E. J.: Parsley as a rich source of vitamin C. Nature 150: 92, 1942.

[27] Brown, E. J., and Fenton, F.: Losses of vitamin C during cooking of parsnips. Food Research 7: 218, 1942.

[28] Todhunter, E. N., and Robbins, R. C.: Ascorbic acid (vitamin C) content of garden-type peas preserved by the frozen-pack method. Washington Agric. Exper. Sta. Bull. 408, 1941.

[29] Lindheimer, G. T., Hinman, W. F., and Halliday, E. G.: The function and occurrence of citrin ("vitamin P"). J. Am. Dietet. A. 18: 503, 1942.

[30] Esselen, W. B., Jr., Lyons, M. E., and Fellers, C. R. Composition and nutritive value of potatoes with special emphasis on vitamin C. Massachusetts Agric. Exper. Sta. Bull. 390, 2–19, 1942.

[31] Pfund, M. C., and Nutting, H. W.: Iron content of potatoes as influenced by cooking method. Food Research 7: 210, 1942.

[32] Engel, R. W.: Modified methods for chemical and biological determination of choline. J. Biol. Chem. 144: 701, 1942.

[33] Woodruff, R. N., and Scoular, F. I.: Loss of vitamin C during cooking of summer squash. Food Research 7: 267, 1942.

[34] Miller, J. C., and Covington, H. M.: Some of the factors affecting the carotene content of sweet potatoes. Proc. Am. Soc. Hort. Sci. 40: 519, 1942.

[35] Murphy, E. F.: The ascorbic acid content of different varieties of Maine-grown tomatoes and cabbages as influenced by locality, season and state of maturity. J. Agric. Research 64: 483, 1942.

[36] Dills, W. L., and Nelson, J. M.: Isolation of a copper-bearing protein from cow milk. J. Am. Chem. Soc. 64: 1616, 1942.

[37] O'Malley, C. M., and Baldi, E. J.: Composition and thiamine and riboflavin content of defatted milk solids. J. Milk Tech. 5: 138, 1942.

[38] Satterfield, G. H., Bailey, E. A., Jr., Foster, J. E., and Hostetler, E. H.: The ascorbic acid content of ewe's blood, colostrum and milk, and the effect of ascorbic acid injections. J. Nutrition 24: 121, 1942.

[39] Deuel, H. J., Jr., Hallman, L. F., Johnston, C., and Mattson, F.: The effect of a high vitamin A intake on the blood and milk carotene of Holstein and Guernsey cows. J. Nutrition 23: 567, 1942.

[40] Dann, W. J., and Handler, P.: The nicotinic acid content of meat. J. Nutrition 24: 153, 1942.

[41] Reedman, E. J., Buckley, L., and Legault, R. T.: The vitamin C (ascorbic acid) content of canned chicken. Canadian J. Research 20: 230, 1942.

[42] Gutowska, M. S., and Parkhurst, R. T.: Studies in mineral nutrition of laying hens. I. The manganese requirement. Poultry Sci. 21: 277, 1942.

[43] Pyke, M., Melville, R., and Sarson, H.: Vitamin C in walnuts. Nature 150: 267, 1942.

[44] Laufer, S., Schwarz, R., and Laufer, L.: Vitamin B complex content of beers, ales and malt tonics. Food Research 7: 306, 1942.

[45] Esselen, W. B., Jr., and Fram, H.: Tomato catsup as a source of vitamin C. J. Home Econ. 34: 677, 1942.

[46] Haydak, M. H., Palmer, L. S., Tanguary, M. C., and Vivino, A. E.: Vitamin content of honeys. J. Nutrition 23: 581, 1942.

[47] Rauch, G. H.: Jams and vitamin C. Food Manufacture 17: 34, 1942.

[48] Pyke, M., and Melville, R.: Vitamin C in rose hips. Biochem. J. 36: 336, 1942.

[49] Bailey, E. M.: Vitamin C content of the fruit of the rose (rose hips). Connecticut Agric. Exper. Sta. Bull. 447: 468, 1941.

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Unusual Sources of Ascorbic Acid—Among less common foods which are rich in ascorbic acid is the black currant. Two ounces of black currants, it is said, will meet an individual's vitamin C requirements. Consumed raw, watercress and strawberries are good sources of ascorbic acid, providing approximately 60 mg. per 100 gm. The edible hips of the wild rose are becoming famous for their content of this vitamin. Thone has suggested that the hip could be increased in size and developed commercially. Verrill, whose thesis is that North Americans should use more foods from South America, states that some of the unusual tropical foods, including the mamey, sapodilla, silkana, ceriman, papaya, anona, soursop, star apple and guava, are now on sale at a few exclusive markets in this country. Papaya has recently been suggested as a substitute for orange in Hawaii, as well as home-made guava juice. Guava has an especially high content of ascorbic acid. Goldberg and Levy found 300 to 400 mg. in each 100 gm. fresh fruit, and on drying the guava fruit they obtained a powder of pleasant aromatic odor and practically no taste with the rather phenomenal quantity of 2500 to 3000 mg. ascorbic acid for each 100 gm.—*Wilder, R. M. and Keys, T. E.: J.A.M.A., 120: 529, 1942.*

Editorial

THE JOURNAL TIGHTENS ITS BELT

Every dietitian today is confronted with shortages—shortage of labor, of equipment, food, and fuel. There is also a paper shortage, and the JOURNAL feeds on paper and ink. The paper shortage, however, resulting in a WPB restriction on all publications based on the amount of paper used last year, did not catch up to the JOURNAL until April 1, too late to affect that issue or the one following but restricting subsequent issues proportionately. The increased circulation during the past year, ironically, has worked a hardship, too, because of the manner in which present allowances are figured. Various devices have been employed to meet the situation.

Beginning with June, and more noticeably since, there has been a reduction in the number of text pages. Also in the interests of space saving many changes have been introduced in the physical makeup of the JOURNAL. These we hope will not seriously affect the appearance of the page or place too much strain on the reader's eyesight. Type pages have been lengthened, columns widened, spaces omitted in the news section, and type size is to be reduced, so that a saving of about 15 per cent in space will have been affected. That is, text which formerly would have filled 40 pages will require only 34 on the new basis. This does not apply to advertising, of course.

Unfortunately, the paper stringency coincides with an urgent and unprecedented need for adequate coverage of the food situation and the field of nutrition and dietetics. Without doubt, "Scylla is on the right hand side and inappeasable Charybdis on the left." News releases and other information pertaining to food and nutrition pour in every day, and important and timely manuscripts are constantly submitted. This means considerable "boiling down" of the former, and perhaps a delay in scheduling and considerable condensing of the latter. By rigorous observance of the foregoing we shall endeavor to maintain JOURNAL standards and effectiveness to the extent that this is possible within the limits of our present allotment of paper.

REPORT OF NOMINATING COMMITTEE, AMERICAN DIETETIC ASSOCIATION, 1942–43[1]

The Nominating Committee, Margaret M. Edwards, Emma L. Feeney, Fern W. Gleiser, Ruth L. White, and Lillian B. Storms, chairman, has submitted the following list of nominees for 1943–44: President-Elect, Maniza Moore, Vanderbilt Hospital, Nashville, Tennessee; Treasurer, Beulah Hunzicker, Presbyterian Hospital, Chicago, and Mable MacLachlan, University Hospital, Ann Arbor. The slate for the Nominating Committee is as follows: Evelyn Anderson, Doctors Hospital, Washington, D. C.; Ruth E. Forsberg, Swedish Hospital, Seattle; Constance C. Hart, Board of Education, Rochester, New York; Kathryn Heitshu, Medical College of Virginia, Richmond; Jean Hawks Hewetson, Michigan State College, East Lansing; Martha S. Pittman, Kansas State College, Manhattan; Nelda Ross, Presbyterian Hospital, New York; and Maxine Turner, Oklahoma State Health Department, Oklahoma City.

[1] *See* this JOURNAL for July 1942, and June–July 1940 for reference to the Constitution concerning the method by which other nominations may be made and for an account of accepted procedures by which the Nominating Committee is guided in the selection of a slate.

Current Comment

SUBSTITUTES, EXTENDERS, DECEIVERS[2]

JENNIE S. WILMOT[3]

Wherever we turn in a study of food habits we find one fundamental truth. For good or ill, it is difficult to change whatever habits have been formed by any individual or group. Even you and I who supposedly are aware of this and open-minded with respect to food, have our likes and dislikes, our more or less ingrained habits and perhaps prejudices. Food customs change slowly, as a study of consumption figures over a period of years attests. The advent of new foods, the presence of certain foods on the market over a longer period in the year, pressure on the part of an enthusiastic salesman or advertising writer, a change of residence—many circumstances influence food habits and finally, slowly, change them.

When we hear people talk about preserving our American way of life, we should pause to consider what that way is. It may be that its ingredients need to be "screened" and that certain elements of that way of life need to be cast aside as worthless or at least of doubtful value. We have succumbed happily to the

[2] Presented before the War Conference of the Texas Dietetic Association, Dallas, March 20, 1943.

[3] Associate Professor of Home Economics, The University of Texas, Austin.

plenty with which we have always been surrounded—the will to possess often has been all that was needed, and the new habits acquired have quickly become a part of our pattern for living. Thus, even though we must have known that war, with all it means in terms of changed ways of living, was inevitable, we clung to our habitual way of doing things, even after Pearl Harbor.

The Sweet Tooth. When sugar was rationed, many resented it. It was obvious of course that a product so dependent upon shipping—in 1940 we imported about 9 billion pounds of cane sugar alone, a quantity sufficient to meet the "some sweets daily" amount—could not be so abundant as before. What did we do? How did we react? Was it, "All right, Uncle Sam; I'll be glad to help by eating less sweets?" Oh, no, we ran to the store and kept it depleted of lemon drops so that we might sweeten our tea and add lemon simultaneously. We besieged the "experts" to give us recipes for cakes and cookies, pies and jellies, candies and canned foods sweetened with syrups. Let us consider the comparative cost of "substitute" sweeteners versus sugar per 100 servings.

Iced tea with lemon and sugar, $1.33; with lemon drops, $1.40.

Punch with sugar, $1.11; with "Karo," $1.15; with "Sweetose," $1.13.

Chocolate cake with sugar, $2.08; with honey, $2.56.

Angel cake with sugar, $1.44; with "ribbon cane," $2.64.

Drop cookies with sugar, $.64; with "Karo," $.72; with "Sweetose," $.72; with "ribbon cane," $.92; with honey, $1.00; with molasses, $1.04; with maple sugar, $1.40.

Popcorn balls (3 qt. popped corn) with sugar, $.12; with honey, $.19.

Those of us who provide meals for large groups have a problem in education that might take many forms, one of which, perhaps, might be directed toward teaching people gradually to adjust to one sweet dessert a day instead of the accustomed two. Perhaps the use of more fresh fruit as a conclusion for meals, in time, will become more general. It may be that we'll learn to prefer the sharp perfection of good black coffee, and mellow, well-brewed tea, and the wholesome goodness of cereal and milk, without the urge to drown the distinct flavor of each with cloying sugar.

The Morning Pickup. Another product that obviously is necessarily scarce is our favorite beverage, coffee. Many who accepted the sugar shortage without a grumble could not quite see how life could go on without the usual amount of coffee. The problem of extenders and substitutes, therefore, became urgent. A reexamination of blends to find the one that yields the most satisfactory number of servings per pound of coffee is one very practical means of extending our rationed quota. There are also substitutes and "stretchers." In the opinion of a group of students and faculty at the University of Texas who have been investigating these, the following are worth considering:

1. Chicory, which in quantities up to one-quarter as much chicory as coffee, gives a desirable product.

2. "Postum." Many people like it as such. Others like half "Postum" and half coffee better than either one or the other alone.

3. "X-TRA Cup" coffee stretcher, made from barley, chicory pea and cocoa shell. This is very satisfactory when one-third mixture and two-thirds coffee are combined.

4. "Sarbon Mix" (chicory and barley) when mixed with coffee in the ratio of one-third mix and two-thirds coffee is very acceptable.

5. "S.O.S." Made from roasted, unmalted rye and barley and imported "garbando" bean. Coffee loses its flavor identity when combined with this in equal amounts. Used in the ratio of one-third to two-thirds coffee, the coffee flavor is more pronounced.

6. "Koff-ee-aid," packed in bottles by the Industrial Sales Corporation, Paterson, New Jersey.

7. "Rio-Bravo," a cereal and chicory combination made by a San Antonio, Texas, firm.

8. "Stretch," a Standard Brands, Inc. stretcher.

9. "Happy Jack," packed by William B. Reilly Company, New Orleans.

The last four, as yet, we have not investigated. In every instance, the amount of "synthetic elastic" that can be combined satisfactorily with a given amount of coffee will be subject to the tastes of the clientele.

Tea. On the eastern trains last summer "maté" (Paraguay tea) was on the menu regularly. This delicious beverage, made from the leaves of a member of the Ilex family, is native to South America. Another member of the same plant species, which has been used in the United States, the Bureau of Chemistry designates as "Cassina" and traces its history as a beverage plant to its use during the Civil War by Confederate soldiers and their families at home. This native Ilex, known as "Youpon," is the evergreen variety. We have dried the leaves at 150 or 200°F. in an oven over a period of 5 to 6 hours. When the leaves are simmered in water 3 minutes the resulting beverage is very acceptable. Commercially, however, this product is yet to be popularized.

Tinned Foods. About the only way to substitute for those canned products formerly so abundant is to use the same or similar foods either raw, frozen, or dehydrated. The rational point of view, of course, is no longer to demand foods in cans when the foods are obtainable fresh. For obvious reasons it is logical to continue to buy canned pears but not citrus fruit, and canned corn but not carrots. Plans and time schedules must be changed to meet these new demands. We are now aware that points are fully as important as dollars and may be exhausted more quickly, and that a careful study of comparable items must therefore be made. When dried Lima beans cost 4 points and the canned and frozen beans 13, it is immediately obvious that the dried ones are "cheaper." But when the number of servings is considered the comparison is even more worthy of attention. A pound of canned or frozen beans serves 4 or 5 persons, a pound of the dried at least twice that number, hence the dried beans are not 9 but 14 points cheaper. The possibility of using some of the products that habit has prompted us to discard is worth considering. When greens are on the menu, combinations are often more interesting than any single

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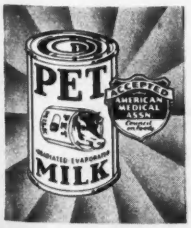

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variety. Thus edible turnip, beet and carrot tops may be mixed with spinach, collards, etc., with satisfactory results and at less cost since we "ate" the cost of the tops when we consumed the carrot, beet or turnip root. Celery leaves might likewise be utilized.

Meat. Meat, due to the intricacies of rationing, remains a problem. The $1\frac{3}{4}$ pounds per person per week may be about the best estimate possible. But the problem of no meat available is of quite another shade—doubtless black! We all know what foods suitably replace beef, lamb, and so on, but we also know that when these substitutes are demanded in large quantities the price, unless controlled, will soar. The prospect for fish will remain dark while deep-sea fishing continues to be restricted in a submarine-infested ocean. The cheese situation is not much brighter and if dairy cows continue their forced march to the auction block it will be considerably darker. At any rate, the proposed ration is ample if meat is served once daily in one-quarter-pound allowances. Such items as stews, hamburgers, curried meats, meat pies, croquettes, meat loaves, etc. are most palatable if the products are well made and seasoned. The possibilities of using vegetables, cereal, soybean meal, etc., to "extend" the available meat and make it "look like what it ain't," are unlimited. Suggestions from the Bureau of Home Economics, the National Live Stock and Meat Board, the meat packers, and writers for magazines have been more plentiful in this field than in any other. Some of the delicious concoctions of the WPA school lunch program, such as "Southern Hash" and "Six Layer Dinner," may prove popular on our home and institution tables. Kidney, when properly prepared, tastes very much like liver and could be substituted for liver at least on a 50 per cent basis in liver loaf, liver soufflé, or meat and liver loaf or pie. The tubes must all be removed before the kidneys are soaked or cooked; otherwise, and contrary to many printed directions, the flavor will be disagreeably strong.

The Staple, Milk. Heretofore we have said very glibly that the most easily obtainable substitutes for plenty of good fluid milk are dry and evaporated milk. We know that this is no longer true, the butter scarcity, in itself, being evidence that there is not enough milk. The limited amount of cheese is further evidence. What will be the answer? Price adjustments are being made to take into consideration the factors that are evidently making dairying unpopular, but many a cow has already become beef and it takes time to raise more cows. Must our milk consumption be lowered temporarily—perhaps even to half the present standard, or the lowest we can accept safely? Perhaps we will consider it necessary to use the available fluid milk chiefly as a beverage and greatly restrict its use in cooking.

Some good may come from the shortage of cheese. When a cheese-maker says he hasn't time to ripen his product before selling it because the demand is too great, he is simply saying that he started wrong. In a sauce, soufflé, or omelet, a given amount of well-ripened cheese will "stretch" further because it doesn't stretch so far. In other words, it is less rubbery in texture, will cook without becoming stringy, and is finer in flavor, so that less will be needed to give a desirable cheese flavor. A bill recently before the Texas legislature, now a law, rules that all margarine for Texas must be fortified and at least equal to butter in respect to its content of vitamin A.

At present it is difficult to foresee what the future may hold with regard to supply and rationing. We may in time realize that there is enough food for all, but not if some of us demand more than our share. We may also learn to be happy with a reasonable portion and not demand so much that at least half remains on the plate to be returned to the kitchen. It is conceivable, too, that we may grow so accustomed to some of the extenders and deceits that we will wish to continue having our food "extended" and being happily deceived. In any event, whether or not our food habits are changed permanently, we can change temporarily certain of our customs and modify our food habits to fit the restrictions of a wartime food program by the use of the above-mentioned and other similar devices.

THE HOSPITAL PAY CAFETERIA

MARGARET M. O'CONNELL[1]

Among the reasons for opening a hospital pay cafeteria are greater satisfaction on the part of the personnel and more economical use of money and labor.

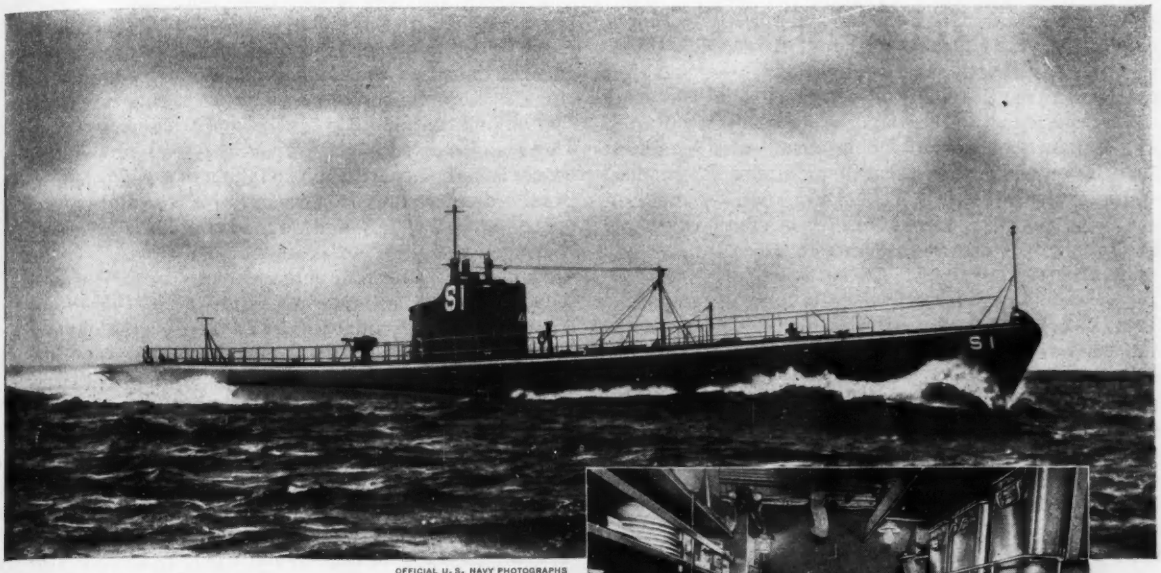
As pointed out by Harrington,[2] the hospital pay cafeteria is not to be looked upon as a means of making money. Since it is established mainly for hospital employees it should be self-sustaining; on the other hand, some hospitals are willing to take a loss in order to offer this service to their employees.

Many think the change from the older type of service to that of the pay cafeteria involves merely the placing of a food checker and a cashier at the end of the counter. This is not true. Studies have shown that the volume of meals served should be sufficient to meet expenses. Likewise, a thorough study of the cost accounting for the department must be made, otherwise the cafeteria will appear to be "in the red" or the patient cost will be carrying the extra load. In short, there must be a close relation between menu planning, preparation, portion control, service and merchandising if the pay cafeteria is to fulfil its purpose.

With the opening of a pay cafeteria many hospitals will show a sharp rise in patient cost because the actual cost of cafeteria food has not been transferred to the proper account. Perhaps the price of beef has risen 5 cents per pound since the raw cost per portion was calculated; therefore for every pound of raw beef used the patient cost took a 5-cent loss. It should be stated here that the services of a food checker are necessary

[1] Harper Hospital, Detroit.

[2] Harrington, Mary M.: The pay cafeteria. J. Am. Dietet. A. 16: 55, 1940.



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to ensure proper food cost control. Although the cafeteria may be termed nonprofit, it should be self-sustaining in that it meets current expenses, including replacement and repair of equipment, and cost of dishes, silver and glassware. A monthly profit-and-loss statement as set up by the American Restaurant Association will give an accurate picture of the financial status of the cafeteria. This can be used for comparison with other nonprofit cafeterias, that is, school lunchrooms or industrial cafeterias. The food cost will range from 40 per cent as set up by Dahl[3] to 58 to 60 per cent as listed for school or industrial cafeterias.[4] The labor percentage will probably be higher, due to the 24-hour service necessary in hospitals; rent, heat and light will vary with institutions and locality; replacement of linen, dishes, silver, and glassware should compare favorably with that of commercial cafeterias. A daily food cost record, giving the quantity of food sold and amount left over, keeps the dietitian posted on the raw food cost percentages and also indicates whether or not too much prepared food is being ordered from the main kitchen. As in any other part of the department, adequate records should be kept, but an intricate system of bookkeeping is unnecessary. The true financial picture is all that is required.

Since the hospital operates for the patient, the master house menu should be used as the basis for cafeteria menus. In menu planning, variety in food as well as in price is necessary. The season of the year, weather, type of clientele and service, and private patient count must be considered. During the winter months variety in vegetables is difficult to attain but if the few available are well prepared and attractively served in different forms repetition is not objectionable. Color and variety of shapes on the cafeteria counter are essential for proper merchandising of foods. Sales of certain salads can be doubled by having a wooden display bowl on the counter; certain foods such as corned beef hash are more popular en casserole, while macaroni and cheese sells better from a steam-table pan. The labor available for preparation and service likewise influences menu planning. It is much better to offer simple foods well prepared and attractively served than fancy dishes haphazardly combined and poorly served. With increased labor turnover, all possible short-cuts in service and preparation which do not lower standards should be effected.

In writing menus for the pay cafeteria, it must be remembered that interns and students receive an allowance from the institution. If they are unable to select an adequate and satisfying diet on the amount allowed because too many popular foods are high-priced, they will clamor for an increased allowance. The higher-priced foods should not be excluded entirely but should appear just often enough so that they are considered a treat. The remainder of the clientele —staff doctors, nurses, office employees and visitors— likewise must be considered. It is good planning to run the more expensive items on week-ends when the volume is lower and the visitor count higher.

A complete reorganization of the food preparation center is necessary with the installing of a pay cafeteria. Standardized recipes are necessary for cost and portion control as well as to maintain food standards. Instead of preparing large amounts of one entrée, smaller amounts of perhaps four entrées are prepared; the total quantity is not altered, just the variety. For this reason it is usually unnecessary to increase the pay roll except for cashier and food checkers. The unit raw cost should be checked each day before service begins so that there will be no loss because of inadequate mark-up. A system of mark-up must be decided upon to maintain a constant food cost percentage—according to Dahl, 10 to 15 per cent on all food transferred from the main kitchen to the dining room.

Standard restaurant and cafeteria portions should be used as the basis for pay cafeteria servings, subject to changes which seem indicated; for instance, a smaller portion of meat might be sold at a lower price. Once the portion is decided upon, employees must be carefully instructed regarding portion size and method of service. The necessary equipment is provided to make slips less easy. All roasts are cut in the kitchen and sampled for weight; ladles and spoons which control standardized portions are provided; casseroles for meat substitutes and side dishes of a standard size are used for vegetables and desserts. Markers are used for cakes and pies, ice cream is cupped as it comes from the freezer and served in the cup.

Business policies maintained in commercial cafeterias should be followed, since the hospital must meet such competition on opening a pay cafeteria. Class distinction has no place in the setup. Assigned tables, definite hours for certain groups, or any coercion to induce persons to patronize the cafeteria will defeat its purpose. The same type of service should be given all customers. Before the cafeteria is opened, certain policies—whether table service will be given, the handling of complaints, whether food may be taken out of the dining room to patients or to nurses' homes, and whether or not credit will be given—must be decided upon and not changed for any individual. With rationing of certain commodities many problems arise. However, by maintaining a set policy at all times, fewer complaints are evident.

One question always asked of those who establish a pay cafeteria is "Do the various groups select an adequate diet?" When the amount of foods purchased at this hospital under the new system was compared with that consumed under the old system, an increased consumption of dairy products, fruits and vegetables was indicated, while that of meat, cereals and desserts decreased. In the employees' cafeteria, in order to increase the milk and calorie intake, a bread and butter sandwich is given with a glass of milk; larger servings

[3] Dahl, J. O.: Restaurant Management. New York: Harper and Brothers.

[4] Horwath & Horwath: How to price dishes on menus of industrial eating places. American Restaurant Magazine, September 1942.

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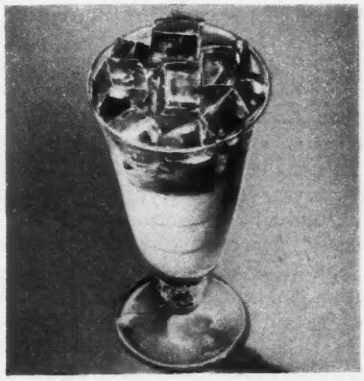
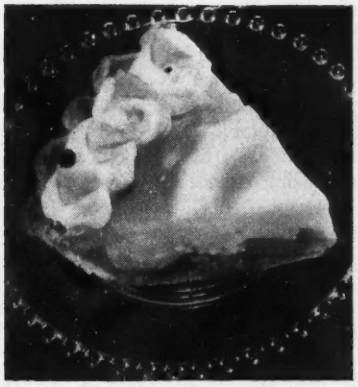
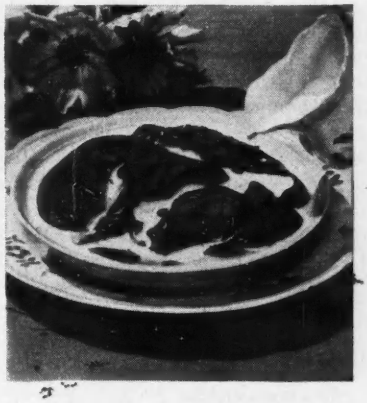


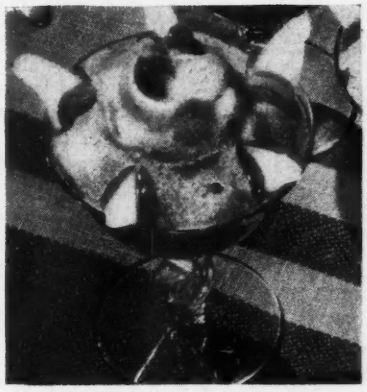
Jell-O Cubes with Pudding. Top Jell-O Vanilla Pudding with Jell-O cubes—a parfait glass full of beauty and rich flavor.



Fruited Cream Pie. Slice fruit in a baked pie shell, cover with Jell-O Vanilla Pudding for a luscious fruit pie.



Jell-O Chocolate Pudding, home style. Serve in sauce dish with plain cream. Tastes "just like Grandma's—only more so."



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of potatoes are likewise given for the same price. Nutrition posters are on display in conspicuous places at all times. Each group of interns and students attends a lecture by the dietitian on the selection of an adequate diet and food budgeting.

Food merchandising is becoming more important with the rise in food cost and the curtailment of variety. In the employees' cafeteria the foods appear on the counter in this order: hot food, salads, desserts, milk, and finally coffee. By rearranging the position of foods on the counter, the average check of one group dropped from $1.25 to $.89 per day. Well-trained employees are one of the best aids to merchandising; by suggesting various items to a hesitant customer they not only increase sales but also keep the cafeteria line moving. Serving the same clientele each day, employees can be trained to observe likes and dislikes of customers. Attractive arrangement with regard to color, shape and texture should always be considered in setting up a cafeteria counter. Fresh fruit is used not only for decoration but also as an economical dessert. Changing service dishes for certain foods from time to time calls attention to the item; this is particularly true of an item which is not popular until a suitable method of serving has been found.

In my opinion the chief disadvantages of the pay cafeteria are: (1) With rising food costs the hospital is faced with the choice of taking a slight loss and maintaining present prices or increasing the allowance of interns and students and raising the prices. This is a problem the hospital administrator will have to decide. (2) It is impossible to obtain replacements at present should equipment on hand not be suitable for cafeteria service. (3) The pay roll is increased, with no assurance that returns will cover this expense.

The advantages of the pay cafeteria as I see them are: (1) Greater satisfaction among hospital personnel. (2) Reduction in food cost. (3) Improved patient service due to provision of dining room facilities for guests at all times during the day, which means fewer guest trays. (4) Discontinuance of all special diets for hospital personnel.

PAY CAFETERIA PROBLEMS

At the Detroit meeting of the American Dietetic Association problems concerned with the hospital pay cafeteria—reasons for establishing, organization, labor problems, food pricing, menu planning, nutrition education, etc.—were discussed by dietitians from hospitals in all parts of the country. Ella M. Eck, University of Chicago Clinics, who presided at the discussion, stated in her introductory remarks that development of the hospital pay cafeteria started about twelve years ago, the first one having been established at the Henry Ford Hospital. The second was instituted by Margaret Gillam at the University of Michigan Hospitals.

In addition to those mentioned by Margaret O'Connell, whose experience with the pay cafeteria at Harper Hospital is described in the preceding paper, advantages of a hospital pay cafeteria were listed as: removal of group discrimination, increased turnover in dining room since reserved tables are not permitted, closer supervision of food service to personnel because of the concentration of food service, and reduction of edible waste. Mary Northrop, King County Hospital System, Seattle, explained that they had been obliged to establish a pay cafeteria since the labor unions demanded straight salaries for all employees.

In each case, some preliminary reorganization was necessary, and certain difficulties were encountered. Marion Floyd, in charge of the Dietary Department at Massachusetts General Hospital where a pay cafeteria for staff and house doctors, secretaries, technicians, etc. has been operated successfully for some time, reported that an employees' cafeteria was opened in 1942. One problem was the hesitancy on the part of the administration who feared that the investment would prove unwise. The paternalistic attitude toward employees, traditionally housed and fed by the hospital, too, had to be combated. In changing from a free to a pay cafeteria at this hospital there was a decrease of 60 per cent in clientele, while amounts of bread, butter, milk, potatoes and other foods used dropped as much as 80 per cent with a comparable decrease in food cost. The most frequent complaint, especially among men clients, was that not enough food was served for the money, the reason being, according to Miss Floyd, that employees had been in the habit of helping themselves to more than they could comfortably eat and wasting the food because it was free. Dietary Department employees eat in a small special dining room.

Lute Troutt stated that the food for the pay cafeteria at Indiana University Hospitals is prepared in the same kitchen as is the patients' food. When the cafeteria was opened books of coupons were issued—$25 for women, $27.50 for men—because at the time funds were not available for increasing salaries to cover the cost of eating in the cafeteria. This system had several disadvantages, chief of which was the fact that the Dietary Department had no control over the issuing of additional coupons. Also, more bookkeeping was involved. Later the cafeteria was operated on a cash basis which was much more satisfactory. The next change was giving the interns all the food they wanted instead of money so that they would stay at the hospital. The same arrangement was made for the nurses in order to ensure their getting sufficient food instead of saving their money for other uses. As a result, there has been more waste and average checks have increased from 23 cents to 45 and 50 cents. However, an attempt has been made to control this waste by limiting the selection of foods to: meat *or* meat substitute, two vegetables, one salad *or* dessert, and one beverage. The nursing school is helping to curb food waste, also.

At New York Hospital, according to Margaret Gillam, there is a cafeteria for doctors and other employees, including housekeeping personnel who receive a salary without meals. A small dining room has been established near the housekeeping offices where employees may eat sandwiches brought from home, or they may

The Nutritional Aspects of "VARIETY MEATS"

VARIETY MEATS, such as liver, kidneys, sweetbreads, brains, tongue, and heart, offer high nutritional value not only for the diet during health, but also in convalescence, and during illness when a full diet is permitted the patient.

The table below, based on reliable assays, reveals the unusually high content of essential nutrients in these variety meats. Through their use the intake of many essential nutrients can be greatly augmented. Of significance during current conditions, these important foodstuffs may be purchased in addition to the weekly sharing allotment of muscle meat, many at relatively reasonable cost.

ESSENTIAL NUTRIENTS (1)

	LIVER	KIDNEYS	SWEET-BREADS	BRAINS	TONGUE	HEART
PROTEIN	20 Gm.	15 Gm.	20 Gm.*	10 Gm.	19 Gm.	17 Gm.
VITAMIN A	12,500 I.U.	1000 I.U.				
VITAMIN D	45 I.U.					
ASCORBIC ACID	35 mg.	14 mg.	45 mg.	14 mg.		
THIAMINE	0.38 mg.	0.32 mg.	0.32 mg.	0.25 mg.	0.28 mg.	0.38 mg.
RIBOFLAVIN	2.90 mg.	2.00 mg.	0.52 mg.	0.26 mg.	0.22 mg.	0.90 mg.
NIACIN	18.0 mg.	8.5 mg.	5.8 mg.	5.0 mg.	6.2 mg.	7.5 mg.

All values given are per 100 Gm. of fresh substance.

(1) *Vitamin values according to Waisman and Elvehjem "Vitamin Content of Meat"; Burgess Publishing Company, Minneapolis, Minnesota, 1941.*

**Cooked.*

The distinctive, attractive taste of these variety meats, and the many different ways in which they can be easily prepared, appeal to the jaded or lagging appetite, and provide welcome change and variation from the usual daily diet.

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American Meat Institute

CHICAGO

eat these in the cafeteria if they wish to buy only coffee or milk. In the cafeteria, "because the interns helped themselves to more breakfast than they could eat," it was proposed to give each an allowance of $10 a month for breakfasts, but the protest was so great that the change was not made.

All employees eat in the same dining room at University of Michigan Hospitals, according to Mable MacLachlan. Elizabeth Tuft, Wesley Memorial Hospital, Chicago, mentioned that they have one cafeteria, operated on a ticket system. The only drawback is that the interns have coupon books over which the Dietary Department has no control—they can be renewed at will. Staff nurses have a 30-dollar book. Those who seldom eat away from the hospital have a 35-dollar book. Doctors and public and private duty nurses pay cash. Students pass through the cafeteria line and carry trays into an adjoining room. The public is not allowed to eat in the cafeteria as it has been found that casual visitors slow down the line.

As an example of a pay cafeteria in a small hospital, the experience of Jennings Hospital, Detroit, was cited. There the cafeteria was installed to relieve crowded conditions and to give the married nurses a chance to eat at home without extra expense. It is operated on a strictly cash basis and serves only lunches and dinners.

Henrietta Becker, Barnes Hospital, St. Louis, said that in opening their pay cafeteria they had agreed to become host to most of the neighborhood, including medical and dental students and the faculty of Washington University as well as the personnel from two other hospitals. Marked labor turnover and food shortages have necessitated sacrificing some of the niceties of service. It has been difficult, for example, to train employees in the making of attractive salads and desserts. Definite written instructions for all positions help somewhat "if the employees stay long enough or take enough interest to learn their duties." Increasing some of the salaries in the lower brackets has had a stabilizing effect. It is the duty of the dietitian in charge of the cafeteria to train employees. Negro women are hired for the dishwashing and scraping unit, and at times have served as bus girls. The cafeteria is one large room where all groups are served. This makes for a democratic atmosphere which Miss Becker said the patrons seemed to enjoy in spite of the noise and at times crowded conditions. All pay cash except student nurses, student dietitians, and interns.

University Hospitals, Cleveland, has a cafeteria for all personnel including employees of the Dietary Department, operated on a cash basis for all except the interns. A record is kept of charges for each intern. One reason for the cafeteria's having been placed on a cash basis was that with the straight shift, those entitled to breakfast and lunch would have received less food under the older type of cafeteria service than those who had lunch and dinner.

As to planning menus for the cafeteria, Miss Floyd remarked that complaints are apt to be made about lack of variety and that the only way to combat this is to provide plenty of variety. Another problem is to keep enough food on the counter. The cafeteria at Massachusetts General Hospital for doctors, technicians, etc. is open from 7 a.m. to 7 p.m. and serves as the coffee shop and tearoom for the hospital in addition to serving 3 meals a day.

In planning menus at Barnes Hospital, since the groups served cannot afford expensive meals, the menu corresponds to that for the hospital personnel. Flavor, color, consistency, etc. are emphasized, since the food layout must have eye appeal. It is not difficult to sell the food, since most of the clientele are practically obliged to eat in the cafeteria; the problem is to keep the menu attractive and varied so that there will be no complaints. The largest number is served at noon, and the greatest variety appears on the noon menu.

All of the dietitians who took part in the discussion agreed that cost control is especially important here. At Barnes Hospital the raw food price is doubled wherever possible in pricing the menu, exceptions being made when it is desirable to include an expensive item for the sake of variety. As prices advance, the business manager must decide whether to continue the items on which the raw food price cannot be doubled. At Wesley Memorial Hospital it was not possible to raise the prices of foods in the cafeteria as food costs rose, because this would have upset the system of issuing coupons. In an attempt to regulate this, the more expensive foods were served less often.

As to education of employees in the selection of a good diet, Miss Floyd stated that notices are posted in the cafeteria at Massachusetts General Hospital, offering to help patrons plan the expending of their food allowance. She added that a well-planned menu and good variety are the best means of persuading employees to eat the right food. Miss MacLachlan said that one of the dietitians at the University of Michigan Hospitals had checked the cafeteria trays for one day, then demonstrated by means of charts how many chose good diets, how many poor, etc. and why the diets were good or bad. Later the trays were again checked and results tabulated.

Miss Northrop said that she had found people suspicious of nutrition education in the cafeteria, as they think they are being forced to buy some particular item. By serving "specials" it is possible to write the menu for a proper meal. With such combinations the beverage is included at no extra cost; other than this the cost of the "special combination" is the same as it would have been had the patron selected each item separately. Incidentally, this has resulted in a greater volume of business, for those who otherwise might have bought 30 cents' worth of food will buy a 40-cent special.

At Barnes Hospital, the dietitian instructs the student nurses in making proper food selections, using the cafeteria menu as a basis for teaching. Each student dietitian is required to make one poster or devise some teaching material suitable for posting where the line forms in the cafeteria.

On the whole, the pay cafeteria seems to have accom-

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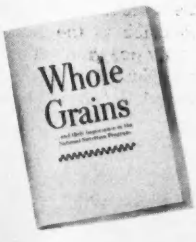

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plished its purpose in the institutions where it has been tried. Employees at Barnes Hospital eat in the cafeteria from choice and, when allowed, bring their families. In general, by serving large and varied groups in one cafeteria, food service is centralized, which means a saving of labor. In all of the pay cafeterias represented, edible waste was cut down. The consensus of those present seemed to be that the pay cafeteria is not a cure-all but that if it is planned on a sound basis and the hospital administration can be persuaded to make the necessary financial outlay on this basis, the results will be well worth the effort.

DISCUSSION OF PROPOSED CONSTITUTIONAL REVISIONS[1]

KATHERINE MITCHELL JOHNSON[2]

Proposed changes in the Constitution of the A. D. A. were presented in the June JOURNAL. Meanwhile, by means of questionnaires, delegates and presidents of state and local associations were offered an opportunity to express their reactions to the suggested changes. Some idea of the reaction of the membership as a whole can be gained from the replies to date.

In general, the reaction has been favorable. However, there have been a few dissenting opinions. In certain instances those opposed have raised pertinent questions which should be well considered. The summary below includes opinions from both state and local dietetic associations. In summarizing these, more space has been given to the dissenting rather than assenting points of view as expressed in returned questionnaires.

Clarification of Membership Requirements. The recommendation that an applicant not actively employed within the last seven years in a position the very nature of which would keep her alert to the newer knowledge of nutrition, must have completed five semester credits in nutrition or related sciences within the last seven years, received unqualified approval by all state and local associations. Requirement 2 with regard to experience—"At least *three* years of successful dietetic or nutrition experience . . . ; *at least one year of this experience must be supervised experience and varied in type to include all phases of applied dietetics included in an approved student course*"—aroused considerable discussion. The increase of required experience from two to three years was considered undesirable by some. It was suggested that instead of stating "at least three years," the phrase "sufficient experience" should be used. It was believed that the latter would give the Membership Committee more leeway in considering unusual cases.

The last half of this requirement, that "at least one year, etc.," was criticized by one or two state associations. One comment reads as follows: "Our Executive Committee feels that the term 'supervised experience' must be clarified . . . . It is a wise plan for all members of the Association to have had training in all phases of applied dietetics, but . . . the requirements as stated would eliminate many extremely worthwhile prospective members whose contribution to the organization would be of great benefit to the membership as a whole—for instance, those who took nutrition training and went into utility work without having served one year in an approved hospital."

Another criticism states: "Those in institution administration seem to feel that the hospital dietitian or one who had had hospital training had a much superior advantage over the person in the institutional field. Applicants who have had one year of hospital training are accepted whereas the applicant from the field of institution administration has to wait three years. There are very few approved courses in institution administration and therefore very few graduates of such courses who would be eligible for membership on the same basis as the hospital dietitian. They believe that the three-year requirement means that many who might be excellent members are permanently lost to the Association. The situation would be quite different if there were more training courses for institution administrators."

Perhaps the reasons for this interpretation of the experience requirement for membership were not sufficiently clear. Much of the recognition that has come to our Association is the result of our educational program which maintains high standards in the approved courses for student dietitians. These courses, namely, the hospital, the administrative, and the food clinic course, offer three specialized training opportunities to the home economics graduate. The standard of training in these courses has been constantly improved and developed through years of experience, and the student is well repaid for the year she spends in any one of these courses.

Instead of entering one of these courses, the home economics graduate can take a position immediately. She may, if she is extremely fortunate, work as an assistant under someone who, recognizing her lack of experience, will guide her through her first year's work so that the assistant will serve more or less as an apprentice, rotating from job to job and conferring with her superior on problems which present themselves and in general strengthening her professional equipment. Such an ideal situation, while possible, is not probable. When a home economics graduate accepts a position immediately upon graduation, she is apt to be assigned a routine and usually small job, or perhaps a highly specialized responsibility concerned only with one phase of dietetics or nutrition work—for example, in charge of the food service in a dining room, possibly for two years. Would she then be qualified to call herself a dietitian? The present Membership Committee thinks not. True, she would have had experience in supervising employees and arranging work schedules, but what experience would she have had in food production or in the practical aspects of food purchasing, of cost accounting, etc., along with the myriad other details with which she would otherwise have become familiar in an administrative course for student dietitians? Assuredly, she would not be equipped to assume directive responsibilities in hospital dietetics. Presumably, she would have had adequate foundation work in nutrition in her college course, but what opportunity would she have had to keep up with the newer aspects of nutrition?

The above example is not an exaggerated instance, for not uncommonly it is the type of experience that is submitted to the Membership Committee in lieu of student training. Since allied professions have evidenced their confidence in our standards, specifically in their acceptance of membership in our Association as the credentials of a dietitian, we must continue to uphold these. It may be that further comments will bring to light a more generally acceptable scheme, but any such plan must serve to ensure that the applicant has had experience equal to that gained in an approved training course.

Diet Therapy vs. Nutrition Section. This change was most heartily and enthusiastically endorsed in about 80 per cent of the replies. A few state associations disapproved, however. One such reported that: "The above suggestion caused a very heated and lengthy discussion. The word 'nutrition' is too broad and applies too much to the entire field covered by dietetics, to be given to only one group of our organization. Many felt that if we had a 'Nutrition Section' and planned a program appropriate to such a title, all members

[1] Received for publication May 29, 1943.

[2] Executive Director, American Dietetic Association, 620 N. Michigan Avenue, Chicago.

Enriched White Bread In A Rationed Nation

We in America can well give a prayer of thanks for the bounty of our great prairie states and the abundance of grain they grow for us.

For, made into good white bread, there's a wealth of energy that comes from that grain—all the more nutritious now that white bread is enriched with certain vitamins and minerals*—nutrients required for our all-out war-time efforts.

Our meat we must share with our fighting men and allies. Our sugar has been rationed. Canned goods are becoming less as the war lengthens, and many other foodstuffs will soon be gone from the grocer's shelves.

But of bread—enriched white bread—there is plenty for all. Plenty for the dinner table. Plenty for the dinner pail of the men who need their strength to make war goods. Plenty for the school lunch box, the after-school snack, before-bed supper. Eat bread—enriched white bread—without stint. Eat many, many slices a day. There's energy in every slice—and victory in energy.

* Thiamine, niacin, and iron.

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of the Association would wish to attend, with consequent loss of interest and activity in the other three existing groups. Even though only 13 members were present, we reached no agreement as to how the word 'nutrition' should be used. I think this fact indicates the highly controversial nature of the problem and that it should be well considered before any final step is taken to limit the use of the word 'nutrition' to any one group of our organization."

A second state association simply voted "no" without stating why.

Increase in Dues. The increase in dues was approved by all except one association. No explanation was given for this one negative vote. However, some of the delegates who voted "yes" apparently did so with reluctance, qualifying their votes by such phrases as, "if the increase will cover expenses of delegates to the annual meeting." Several state associations voted "yes, if necessary." One delegate approved the increase in dues, but thought that $7.50 was not enough. One state association raised the question: "Has the plan of including state dues been considered? Then all A. D. A. members would be more apt to participate in state affairs. Other associations have adopted this plan to advantage." Another delegate makes the following comment: "Is $7.50 going to be sufficient for some time? It doesn't seem like a great increase for the increased benefits members now receive compared to earlier years." Several pointed out that even at $7.50 our dues are only a fraction of that of certain other professional associations. Others implied that a smaller increase would be more acceptable. On the whole, the vote for this change was an unenthusiastic "yes." No one, however, suggested what activities of the Association should be curtailed if the increase in dues is disallowed.

House of Delegates as Legislative Body, A. D. A. This plan met with unanimous and unqualified approval. The great majority considered one delegate for each 50 members satisfactory, but there were three who expressed dissenting opinions: One recommended one additional delegate for each 30 members; another suggested one additional delegate for each 100 members; while a third, a state president, offered this opinion: "One additional delegate for every 50 members is too large a group; not a wise move in wartime; too expensive." On the question of whether the state or the national Association should assist in paying delegates' expenses to the annual meeting, 25 per cent voted that this problem should be the responsibility of state associations; the remaining 75 per cent, that the national Association should assist in this financial problem.

Every member of the American Dietetic Association should thoughtfully consider all angles of the proposed revisions to the Constitution and be prepared to vote on these questions at the annual meeting.

Nutrition and the War

RATIONING AS IT AFFECTS THE ADMINISTRATIVE DIETITIAN

When point rationing of processed foods had been in effect a little over a month and that of meats, fats, and oils for a shorter period, the Missouri Dietetic Association conducted a discussion of rationing as an institutional problem at the tenth annual meeting, Kansas City, April 9–10. The papers read at this meeting demonstrate how a group of administrative dietitians managed to meet the sudden demands of rationing and continued to operate apparently without any drastic change in their service. Many of the difficulties which they faced, and the dilemma in which at least one dietitian found herself, are no doubt typical of those experienced by others elsewhere, but their solutions, some of them admittedly temporary, while others have permanent value, should be of general interest.

Louise Wilkonson, head dietitian, Barnes Hospital, St. Louis, discussed food rationing as it affects the hospital pay cafeteria. Some of her comments follow:

At this particular stage in the rationing program, the whole situation is very confused and it is therefore difficult to make constructive suggestions. The OPA's choice of December as the month on which to base our allowance for rationed foods was most unfortunate, and perhaps equally so was the placing of hospitals in the same category with hotels, restaurants, cafeterias, etc. We all hope that an adjustment will be made soon.

As everyone knows, variety is a basic requirement in the cafeteria. Even though we may offer 2 inexpensive cuts of meat, the fact that there is a choice tends to keep our clients satisfied. Ever since it was learned that for several months we would have no points to spend for rationed staples and canned goods, we have had no canned fruits in salads or desserts on the menu, as we are holding most of our rather limited supply in reserve. We have had to replace all canned items with fresh vegetables and fruits. Instead of 4 or more salads each meal, we now have 2 or 3. The St. Louis fresh fruit and vegetable market has been extremely limited, and as a result we have had to use root vegetables almost exclusively. The ration allowance on meats and fats means that we must very definitely curtail our variety. For instance, our menu formerly called for 3 meats at noon, one of which might be a meat substitute or so-called "stretched" dish. Now we include only 2 protein dishes, both of which at times are "extended" dishes. We use a butter cutter yielding 72 squares to the pound. No one complains, fortunately. We are using shark meat for the first time and it remains to be seen just how popular it will be. We are experimenting with soybean granules as an extender in meat dishes and it appears that we can make good use of soybeans.

We have limited the variety on our dessert counter to about half that of pre-rationing days. Like other institutions, we use frozen fruits, but not too freely, due to the cost. Cobblers often substitute for pies since less dough and less fruit are needed. Hospital dietitians might even adopt the Army custom of making pies in large square baking sheets and cutting the servings in squares, which would save both labor and materials.

Prior to rationing, our recipes had been tested and standardized at 50 and 100 servings. Now we have to prepare larger portions of one or two items using unrationed ingredients, so it has been necessary to make over some recipes.

Because of increasing interest in the feeding of industrial workers, the following report by Jeanne Murray, dietitian, Curtiss-Wright Corporation, Lambert Field, St. Louis, is especially timely:

Unlike the institution serving 3 meals a day, the defense plant cafeteria is open for 24-hour duty. Since there are 3 shifts, 3 breakfasts, lunches, and suppers have to be served daily. At the principal serving period, the noon lunch from 11:15 a.m. to 1:30 p.m., approximately 500 people enter the cafeteria every 15 minutes to go through the lines. The 5 serving counters in the main cafeteria are supplemented by 3 wagons which are dispatched to the lunchrooms to serve sandwiches, beverages, cake and ice cream to employees who bring their lunches. In addition, the executives have a private dining room seating about 80 people which has its own serving pantry and equipment for special orders and is open for 3 meals. A new plant which is opening soon will also be equipped to serve workers, the food to be transferred from the main kitchen.

Some advantages of Gerber's Cereals in ulcer and other gastro-intestinal conditions

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In diets requiring the use of gastric antacids, there may be interference with the normal absorption of iron from the intestinal tract. Both Gerber's cereals are fortified with iron (See table below) and help to restore the balance.

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	Thiamine mg.	*Iron mg.*	*Calories*	*Crude Fibre %*
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* ¼ oz. dry cereal with 2 oz. milk Cereal Food .28% crude fibre, Oatmeal .2% crude fibre.

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When rationing went into effect, the great problem, besides menu planning, was stock control. In order to maintain accurate records, the posting and inventory control had to be revised and close control kept of all goods issued from the stockroom. Each day orders are typed and approved by the cafeteria manager and assistant manager before they are filled. The requisitions are returned to the office where they are calculated, when necessary, as to point values. A running account of these points is kept. A booklet was prepared in which the total point value of each item of processed food in the storeroom was recorded so that the total points per order could easily be ascertained.

After an order has been called in, a request for a point or pound check, covering these items, has to be approved by the cafeteria manager and then forwarded to the accounting department, which in turn forwards the check to the vendor. With meat, there was the problem of having to wait until it had been weighed in by the receiving clerk whereupon the request had to be made out and sent to the accounting department. Now point checks are sent to the vendors the day after the meat has been received.

Since the accounting department handles inventory and point system records, the main problem of the cafeteria manager is to see that points are kept under control and, if possible, below the quota per day. This has meant a revision of the system of food planning and purchasing. For example, canned vegetables had been used to a great extent before rationing. The preparation of 20 sacks of potatoes, 6 hampers of turnips, and 22 cases of cauliflower for one day requires careful planning of work. Therefore fresh vegetables have to be limited to cabbage, cauliflower, carrots, turnips, beets, and the like, while tomatoes, catsup, peas, and fruit slices still have to be drawn from the processed foods stock.

The cafeteria is run on a nonprofit basis. Food cost is based on 57 per cent; although because of increased food costs this may have to be lowered to 50 per cent. Prices on most items have had to be raised. Over 75 per cent of the personnel is now served in the cafeteria or by the wagons.

Luncheon meats can no longer be served and meat entrées using extenders have been developed. Jam, jelly, peanut butter, cottage cheese, and egg salad sandwiches to a great extent replace meats and hamburgers. These are served as open sandwiches. Spaghetti dishes with meat and mushroom sauces are now taking the place of chili meat dishes. Omelets and other egg dishes, meat loaf, and croquettes are replacing roasts, steaks, and chops. Most popular are the stews and meat pies. Chicken pies sell better than fried chicken. The average worker wants a hearty meal which is also inexpensive. No meat is served on the breakfast lines; fruit, pancakes, and eggs are featured instead.

Since the employee must be persuaded rather than forced to buy well-balanced meals, we make an effort to have all combinations nutritionally adequate. By offering fresh salads, fruit salad plates, vegetable plates, and attractive sandwiches, the cafeteria manager tries to provide one-third of the daily requirements of the workers at each meal, which would seem to be the best way of helping them to help themselves.

Our chief problem now is to make our point allowance carry over each period. If this is not possible, we may have to resort to one-item specials and sandwich plates. In any event, we hope to be able to continue to serve pleasingly varied, appealing and adequate meals.

Rationing problems of the school lunchroom manager were ingeniously met by Marianna Beck, Washington Technical High School, St. Louis, where a flexible menu plan served in good stead. Specifically, some of the substitutions and extenders used there were described by Miss Beck as follows:

When sugar was rationed our quota was unusually small and it was necessary to make certain changes. Corn syrup is used as a substitute for sugar wherever possible, particularly in rolls, gingerbreads, and puddings, while sugar is used in the more simple desserts such as tapioca and custards. Even with rationing of canned goods, we have continued to have at least one green vegetable daily. Instead of plain buttered peas or green beans, these are combined with a fresh vegetable such as celery or carrots; as a result, carrots, once unpopular, quickly become a sell-out when used in a combination dish. We still include green peas in vegetable salad, not only for the nutritive value they contribute but also for the attractive color which we might otherwise have to forego, especially when green peppers are unavailable. Canned fruits, once an important item for use in desserts and salads, now are used chiefly in combination with other foods.

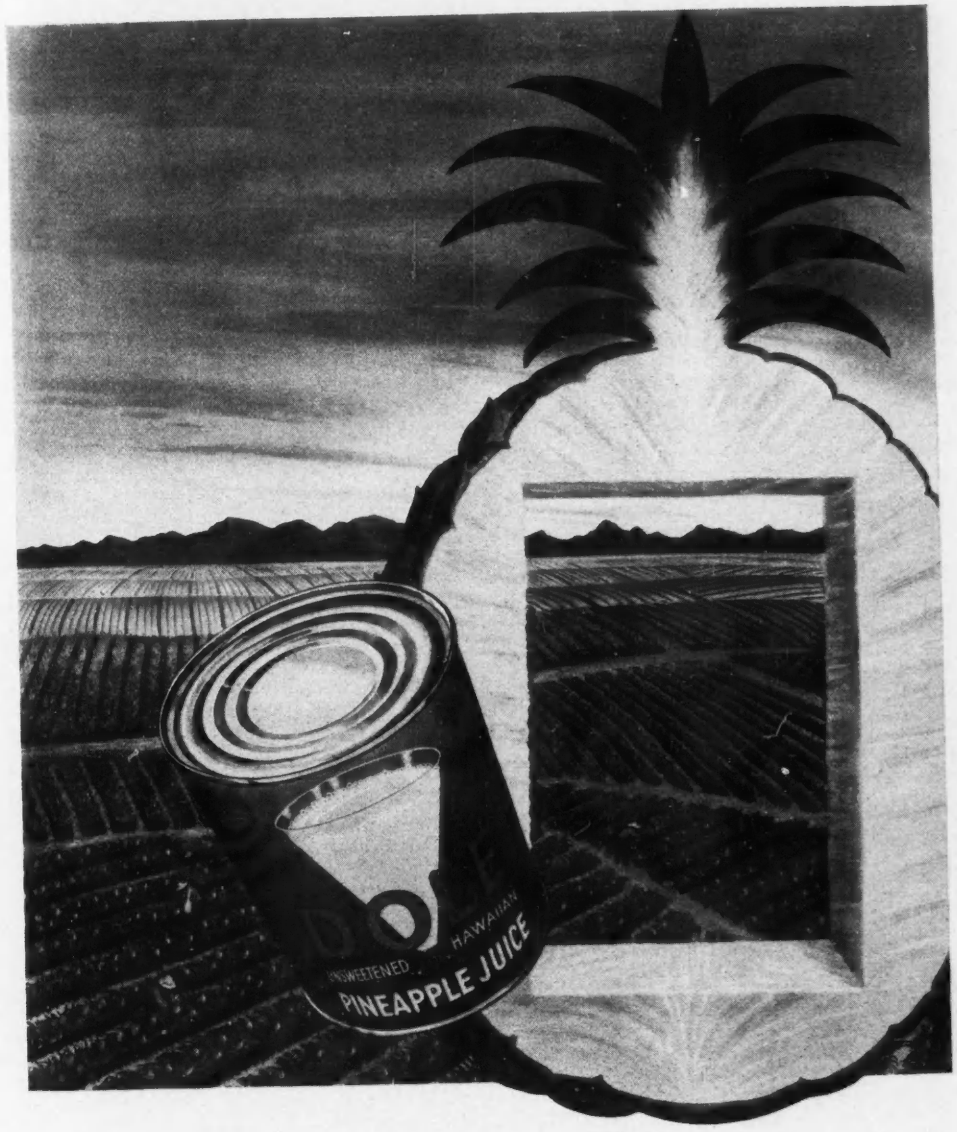
By the time meat rationing went into effect, our selection was very limited. We had already instituted a voluntary meatless day, when a meat substitute was used as the main dish. We have found that chili made with beef or pork liver is as satisfactory as that made with hamburger. On days when meat is served we use either hamburger in some form, roast beef chuck, or glandular organs, usually in a thick stew. We still continue to buy cold meats for sandwiches, and when cheese is available it is combined with milk in a spread.

The school cafeterias are supposed to be self-operating. Each item is sold at 5 cents. With the increased food cost we have attempted to control portions to fit the cost per item, especially with regard to the main dish and fresh green vegetables if and when these appear on the counter. Ice cream is limited to one portion per student.

Our regular customers have probably noticed but little change, as we have always served a variety of foods with no set menu for a given day. Since we use the kitchen as an experimental laboratory for developing new dishes, our students have learned to anticipate a new dish at any time. Rationing has made us more aware of the need for careful preliminary planning and control of every step in the handling of food, including its proper utilization with the least amount of waste.

The special difficulties with which Mary Abbie Sherwood, sole dietitian at the University Hospital, Columbia, had to cope, difficulties unsolved up to the time her paper was read, are suggested by this quotation from her report:

In normal times our hospital is for private patients, university students, and crippled children. Now we are feeding bed patients from the Army, Navy, and civilian groups. In our dining room we are also feeding convalescent Army patients who eat side by side with hospital personnel entitled to one, two, or three meals daily. It is impossible to discriminate either in the wards or in the dining room between these two groups, yet am I doing my duty if I do not insist that rationing is rigidly adhered to among the civilians? How many points per person for each group should I plan to use each week? I have been told not to worry about the situation as there are adequate emergency measures to take care of all our needs, and that all agencies involved are diligently working toward a solution of the complicated problem. But when 7 men drink 8 quarts of milk for supper and eat 7 platters of bacon and 7 plates of toast for breakfast, I can only hope the food holds out until my situation is clarified.



• **A great crop of Dole Pineapple will be harvested this summer. But, because of the convenience, keeping qualities, and nutritive importance of canned foods in the balanced diet of the Armed Forces, the Government will require about ¾ of the Dole Pineapple and about ⅓ of the Dole Pineapple Juice.**

• **While this harvesting and packing goes on, Dole is constantly planning and regularly planting for future years.**

HAWAIIAN PINEAPPLE PRODUCTS

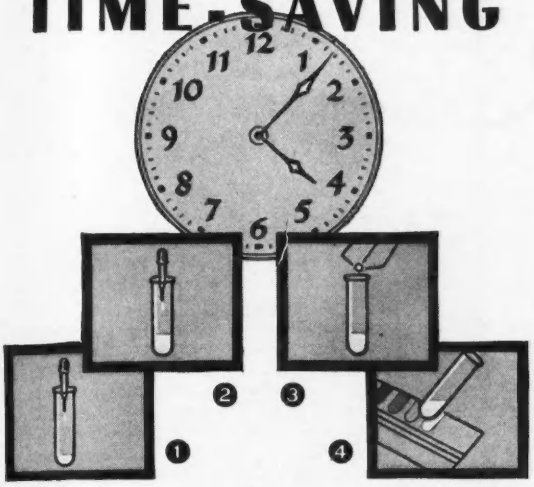
DOLE

DIETITIANS RECENTLY APPOINTED TO MEDICAL DEPARTMENT, ARMY OF THE UNITED STATES*

NAME	SCHOOL	TRAINING COURSE	STATION ASSIGNED
Abrams, Selma	Hunter Col.		S.H. Selman Fld., Monroe, La.
Adams, Dorothy Ann	Columbia Univ.	Mass. G. H.	Overseas
Alford, Louise Little	Georgia State Col.		W.R.G.H., Washington
Allen, Florence Arline	Drexel Inst. of Tech.	Philadelphia G. H.	Overseas
Altermatt, Lucille Bernice	Univ. of N. Dakota	St. Mary's Hosp.	S.H. Cp. Phillips, Kan.
Arzt, Elizabeth	Univ. of Minn.	Cincinnati G. H.	S.H. Cp. Swift, Tex.
Bailey, Virginia Meredith	Univ. of Minn.	Johns Hopkins Hosp.	S.H. Ft. Leonard Wood, Mo.
Bosshard, Beth Alice	Univ. of Wash.	Ancker Hosp.	Barnes G.H., Vancouver Bks., Wash.
Calpin, Alice Marie	Marywood Col., Penn.		Overseas
Carson, Maude E.	Kansas State Col.	Seattle Student Course	Borden G. H., Chickashaw, Okla.
Chapman, Velma L.	Penn State Col.		Woodrow Wilson G.H., Va.
Charters, Janet Eleanor	Ohio Univ.	Henry Ford Hosp.	S.H. Cp. Abbot, Bend, Ore.
Clapp, Elizabeth May	Mass. State Col.		S.H. Cp. Davis, N. C.
Coates, Olive Marie	Oregon State Col.		Barnes G.H.
Dell, Barbara Ruth	Mich. State Col.	Johns Hopkins Hosp.	S.H. Turner Fld., Ga.
Dempsey, Carolyn	Univ. of Wichita, Kan.		S.H. Cp., Bowie, Tex.
Dienstein, Isabel	Univ. of Calif.	Calif. Lutheran Hosp.	S.H. Cp. Haan, Calif.
Emmons, Elizabeth Jane	Univ. of Iowa	Iowa Univ. Hosp.	Brooks G. H., Tex.
Farmer, Elizabeth Almeda	Univ. of Montana	Seattle Student Course	S.H. Cp. Howze, Tex.
Fariss, Ida Mae	Okla. Col. for Women	Hahnemann Hosp.	S.H. Cp. Gordon-Johnson, Carabella, Fla.
Farrell, Aileen M.	Mundelein Col.	Cook County Hosp.	Overseas
Fergusen, Irene	New York Univ.		S.H. Cp. Gordon, Ga.
Fisk, Fannye Hortense	Battle Creek Col.	Indiana Univ.	S.H. Cp. Sibert, Ala.
Flaherty, Betty F.	Montana State Univ.	Harper Hosp.	S.H. Cp. Adair, Ore.
Goldthwaite, Eleanor	Framingham S. T. C.		S.H. Cp. Forrest, Tenn.
Gorman, Margaret C.	Univ. of Minn.	Harper Hosp.	Barnes G. H.
Honeycutt, Willie Dale	Asheville T. C., N. C.		Overseas
Jensen, Eva Johanna	Stout Inst.	Univ. of Minn. Hosp.	S.H. Cp. Haan
Kelly, Eileen Louise	Mt. Mary Col., Wisc.	Michael Reese Hosp.	S.H. Laurenburg-Maxton, Army Air Base, N. C.
Kessel, Harriett Natalie	Univ. of Cincinnati	Beth Israel Hosp.	S.H. Ft. Dix, N. J.
Kurtz, Nellie Anna	Mich. State Col.	Beth Israel Hosp.	S.H. Cp. Hood, Tex.
Levy, Shirley Ruth	Syracuse Univ.	Beth Israel Hosp.	S.H. Fort Dix
Ludemann, Lois Evelyn	Iowa State Col.	Alameda County Course	Schick G. H., Clinton, Ill.
McAllister, Agnes Grace	Univ. of Ill.	Indiana Univ.	Overseas
McIntyre, Elizabeth J.	Univ. of Okla.	Michael Reese Hosp.	Winter G. H., Topeka, Kan.
Marvin, Eleanor Augusta	Col. of Mt. Mercy, Penn.	Western Penn. Hosp.	S.H. Westover Fld., Mass.
Miller, Violet M. M.	Carnegie Inst. of Tech.	Philadelphia G. H.	Overseas
Moore, Marion Elizabeth	Mich. State Col.	Univ. Hosp., Ann Arbor	S.H. Cp. Carson, Colo.
O'Connor, Margaret Cecelia	Marywood Col., Penn.		S.H. Ft. B. Harrison, Ind.
Oram, Phyllis	Framingham S. T. C.		S.H. Cp. Van Dorn, N. C.
Parr, Vivian Rose	Iowa State Col.	Indiana Univ.	Overseas
Pendry, Reba Jean	Indiana Univ.	Indiana Univ.	W.R.G.H., Washington
Peterson, Mary Angela	Univ. of Wash.	St. Louis Univ. Hosp.	S.H. Ft. G. Wright, Wash.
Queneau, Marguerite Jeanne	Univ. of Minn.	Minneapolis G. H.	S.H. Cp. Campbell, Ky.
Regier, Millie Margaret	Kansas Univ.	N. J. Cooperative	S.H. Ft. Riley, Kan.
Rosenberg, Esther K.	Carnegie Inst. of Tech.	N. J. Cooperative	S.H. Mitchell Fld., N. Y.
Ruggles, Dorothy May	Iowa State Col.	Calif. Lutheran Hosp.	S.H. Cp. Roberts, Calif.
Schutts, Harriet Lucille	Univ. of Iowa	Iowa Univ. Hosp.	S.H. Army Air Base, Alliance, Neb.
Shamburger, Elizabeth	Womens Col., Univ. of N. C.	Pennsylvania Hosp.	S.H. Ft. Bragg, N. C.
Sledge, Wilma Eloise	La. Polytech. Inst.	Harper Hosp.	Letterman G. H., San Francisco
Stutheit, Elizabeth Janet	Univ. of Iowa	Iowa Univ. Hosp.	Borden G. H.
Thomas, Lois Irene	Syracuse Univ.		Overseas
Tishkin, Doris	Hunter Col.		S.H., Bradley Fld., Conn.
Toolan, Vivian Doris	Marywood Col., Penn.	St. Mary's Hosp.	W.R.G.H., Washington
Warren, Hazel Bernice	U. C. L. A.	Scripps Metabolic Clin.	S.H. Cp. White, Ore.
Williams, Sarah Frances	Mt. St. Mary's Col., Calif.	Scripps Metabolic Clin.	S.H. Ft. Ord, Calif.
Zeitel, Phoebe Helen	Hunter Col.		S.H. Cp. Sibert

* Received for publication from Major Helen C. Burns, June 4, 1943. All those for whom the name of training courses is not listed have had qualified hospital experience. In order to save space, complete addresses of hospitals appear but once: *i.e.* Barnes G. H., Vancouver Bks., Wash., appears as simply Barnes G. H., after the first listing.

TIME-SAVING



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A Copper Reduction Test

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Taking Less Than 1 Minute!

① 5 drops urine
② 10 drops water
③ 1 Clinitest Tablet
④ Comparison with color scale

No external heat necessary—tablet generates own heat. No measuring, no liquids or powder to spill, no complex apparatus.

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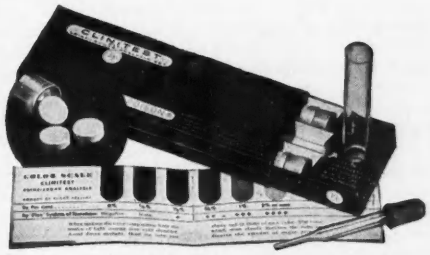

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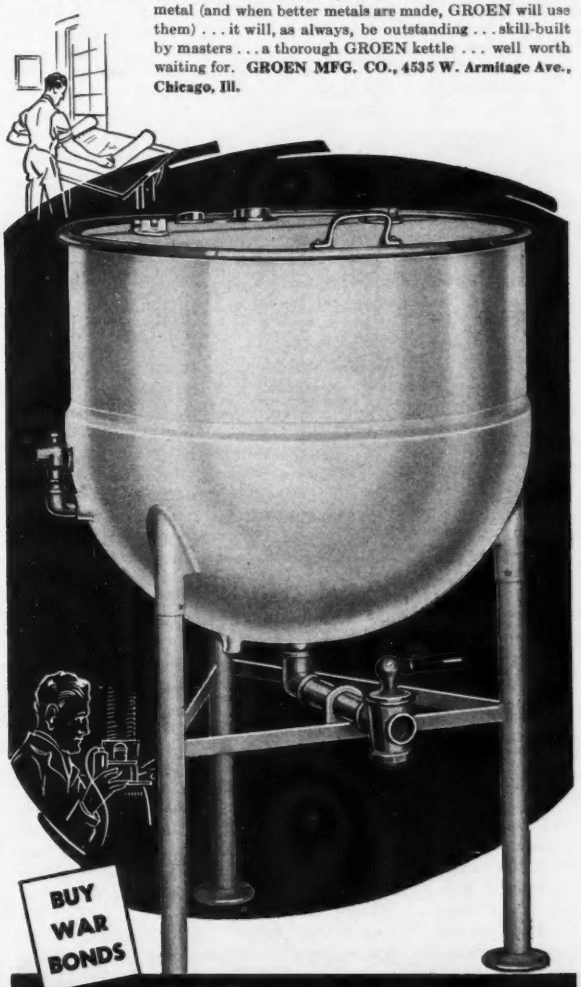

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Book Reviews

The March of Medicine. The New York Academy of Medicine Lectures to the Laity, No. 7. New York: Columbia University Press, 1943. Cloth. Illustrated. Pp. 217. Price $2.50.

To stimulate interest in health matters and to furnish factual information, the New York Academy of Medicine several years ago instituted its annual series of Lectures to the Laity which have proved highly successful. Here in book form are the latest in the series, the topics for which were selected as most timely for a nation at war.

Two of the six lectures are entitled: "The History of the B-Vitamins," by Dr. Norman Jolliffe, and "The Newer Knowledge of Nutrition," by Dr. Anton J. Carlson. In the lecture on tuberculosis, Dr. James Alexander Miller stresses the importance of nutrition in the treatment of this disease. Dr. Jolliffe summarizes, in 24 pages, the discoveries leading up to our present knowledge of the B-vitamins, and comments: "In spite of our great advances in the knowledge of nutrition, the practical application of these discoveries lags dangerously behind."

The subtitle to Dr. Carlson's topic—"How Much of It Is Knowledge?"—suggests the tenor of his remarks, which as usual are refreshingly unhackneyed and force the reader, willy-nilly, to view the existing body of nutrition knowledge from a new point. Whether or not one agrees with all of the beliefs expressed, the need for this type of thinking cannot be denied, in order to keep the laity, as well as the medical profession, from going "off the deep end" as far as nutrition information is concerned. Dr. Carlson stresses omnivorousness as a first dietary principle, along with the use of natural foods. He also elaborates an opinion expressed earlier in this JOURNAL for October 1942, namely, that the state of the nation, nutritionally speaking, is not so bad as has been pictured, and he shows why the records on which this assumption was based are not true evidence. His remarks on the so-called symptoms of malnutrition which are often accepted—"loss of appetite" or "backwardness in school," etc.—are especially interesting. The School Lunch Program and the advertising of foods and vitamin concentrates come in for some vigorous criticism, most of which is constructive. He concludes with the suggestion that, "Pending the greater scientific understanding as to human food needs for optimum health, these important things can and should be done now: (a) cleanse our present food and nutrition science of all fads, of all commercial and political propaganda; and (b) move it from the ivory tower down to comprehension and appreciation of the common man."

Food Poisoning. By G. M. Dack, Ph.D., M.D., Associate Professor of Bacteriology, University of Chicago. Chicago: The University of Chicago Press, 1943. Cloth. Pp. 138. Price $2.

The scope of this book, written by a recognized authority on food poisoning, is best indicated by a listing of the chapter headings: Chemical Poisoning in Food, Poisonous Plants and Animals, Botulism, Staphylococcus Food Poisoning, Salmonella, Alpha-Type Streptococci in Relation to Food Poisoning, Significance of Other Bacteria in Food Poisoning, and Infections To Be Differentiated From Food Poisoning. The various agents which may cause food poisoning are critically discussed, following an introductory chapter which should dispel many common misconceptions and discourage the practice of accepting blanket diagnosis of certain gastro-intestinal disturbances under the misnomer, "ptomaine poisoning." The popular tendency to associate food poisoning with food putrefaction is aptly countered in the author's comment on Limburger cheese. The same chapter includes especially pertinent suggestions regarding the investigation of food poisoning outbreaks and printed forms which list questions to be filled out by persons alleging illness from food, and their attending physicians. Unquestionably this book should be required collateral reading for students of medicine, home economics, and food bacteriology. No one responsible for the feeding of large groups, whether in the armed forces or among civilians, should fail to avail himself of the information contained in this book.

Synopsis of Diseases of the Skin. By Richard L. Sutton, M.D., Emeritus Professor of Dermatology, and Richard L. Sutton, Jr., M.D., Assistant Professor of Dermatology, University of Kansas Medical School. St. Louis: The C. V. Mosby Company, 1942. Leatherette. Illustrated. Pp. 481. Price $5.50.

While here and there mention is made of the direct or indirect dietary etiology of certain skin conditions, there is relatively little in this handbook of concern to dietitians. Vitamin therapy, as might be expected, is mentioned most frequently in this connection. As the authors say, "vitamin concentrates have proved their efficacy in the relief of conditions due to their inadequate supply or utilization" and "iron is of dermatologic value mainly for sore tongue due to secondary anemia." Coagulability of the blood "is perhaps diminished in a number of cutaneous disorders, particularly urticaria, pernio, and purpura" in which case calcium salts is suggested.

Of chief interest to the dietitian is the chapter on metabolic dermatoses in which specific references are made to the diet therapy or dietary etiology of a number of conditions. For instance, in acne vulgaris and rosacea the treatment is largely by means of diet therapy. The discussion of the avitaminoses which bear relation to skin disorders, while concise, is fairly adequate. The vitamin alphabet here, if anything, is a bit too extensive, according to generally accepted limitations. With regard to the therapy of the avitaminoses, the authors say that treatment "is direct and satisfactory. It is better to err on the side of excessive dosage, for overdose symptoms are rarely conspicuous. Many of the cases one sees are persons of limited means and understanding, but they are capable of being taught to spend a meager food allowance more to their profit." For some reason the authors add this: "It is hard to see through the murk of faddism even among alleged nutritional experts. If presumptive hypovitaminosis is wholly subclinical, we think it is for practical purposes insignificant." The book is generously illustrated with excellent photographs which will materially aid diagnosis.

Complete Book of Home Canning. By Demetria M. Taylor. New York: Greenberg, Publisher, Inc., 1943. Cloth. Illustrated. Pp. 164. Price $2.

This book, as the title states, is a complete reference for home canners, especially beginners. The author, an experienced writer on home economics topics, takes pains, first of all, to interest the reader in the art of home canning by describing the "deep sense of contentment" which comes at the end of a

Put yourself in a patient's place at breakfast time!

Another hot day dawns.
Then, in comes your breakfast—crisp
Kellogg's Corn Flakes bright with fresh fruit..

. . . colorful, cool, inviting. Your listless appetite perks up on the instant. You feel like eating—and lots.

Being a dietitian you understand the value to patients of a breakfast dish that creates a natural desire to eat.

Mighty important in diet planning—Kellogg's Corn Flakes supply whole grain nutritive values in thiamin (Vitamin B_1), niacin and iron. And a normal serving of Kellogg's Corn Flakes (1 oz.) and milk (4 oz.) provides 6.2 grams of protein.

Served regularly in hundreds of large institutions, Kellogg's Corn Flakes are especially important now because they are *plentiful* . . . because they help save other foods, time, work and fuel.

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successful canning season. "Home Canning Is Fun," the first chapter, cautions against undertaking too much in one day and includes useful general information about the "canning budget," enemies of food and types of spoilage, and preservatives. Equipment is then described, followed by a chapter on the various modern methods of canning. Acid and nonacid vegetables are treated separately, with step-by-step recipes, as are meats, fish, and poultry. There is a chapter on home dehydration of foods which supplements the government bulletins on this subject. Methods and recipes for making preserves and jellies, jams and conserves, are given ample space. There are also recipes for "processed jams requiring less sugar."

To victory gardeners and others who are able, even in a small way, to add to the nation's stores of preserved foods for next year, this book can be highly recommended.

Ration Cook Book. By Demetria M. Taylor. New York: Reklam Press, 1943. Paper. Pp. 63. Price 49 cents.

The price and number of pages in this book are no criteria of its value. It is crammed with useful, sensible information for the housewife, and each of its 63 pages (8¼ by 10¾ inches) contains three to four times as much text matter as the average cloth-bound cook book. Some special features are: Four, Three, and Two-Star Foods (according to nutritive value), an unusually complete list of food substitutes and "stretchers," schedule of rationed foods with point values to be filled in by the housewife, list of suggestions for stretching canned vegetables over two meals, plus any number of appropriate wartime recipes and cooking hints, the whole well organized and completely indexed.

The Food You Eat. A Practical Guide to Home Nutrition. By Samuel and Violette Glasstone. Norman: University of Oklahoma Press, 1943. Cloth. Pp. 277. Price $2.25.

Seven chapters comprise the content of this book, namely: Health, Hunger, and Nutrition; The Human Machine; Digestion; Mineral Elements and Water; Vitamins; Food Products; and Planning the Menu. Written by a physical chemist and his wife, a plant physiologist (formerly of the Universities of Sheffield and Oxford [England], Princeton University and the Rockefeller Institute for Medical Research), the book demonstrates the authors' awareness of the more directly practical aspects of the food problem as it exists today. Highly pertinent and usable information on nutrition is presented in language sufficiently nontechnical as to be understandable to the intelligent layman.

Double-Quick Cooking for Part-Time Homemakers. By Ida Bailey Allen. New York: M. Barrows and Company, 1943. Cloth. Illustrated. Pp. 241. Price $2.

This book stresses time-saving menus and recipes and the wise use of rationed and scarce foods. The introductory chapters, "Punching the Kitchen Time Clock" and "Planning Double-Quick Meals," contain excellent general suggestions. In succeeding chapters the time required to prepare each meal is stated. Menus and tested recipes are grouped as follows: breakfasts, everyday family luncheons and dinners, 30 to 40-minute dinners for bachelor girls and small families, 2-burner dinners and oven meals for kitchenettes and trailers, Sunday and holiday dinners, suppers and evening snacks, foods that can be cooked ahead, the carried lunch, gift foods for service men. The final chapter, "Avoiding Food Waste," includes 164 suggestions for utilizing "oddments" of cooked cereal, bread, various kinds of meat and fish, etc.

Now that so many homemakers have gone into war work and since household help is almost impossible to obtain, this book should find a ready market. The unusually attractive format and the author's modern, informal approach and manner of expression will appeal especially to the young housekeeper.

Victory Vitamin Cook Book for Wartime Meals. By Florence LaGanke Harris. New York: Wm. Penn Publishing Corp., 1943. Cloth. Pp. 185. Price $1.50.

The real value of this book lies in the collection of interesting family-size recipes, including several new suggestions for meat substitute dishes and sugar-saving desserts, as well as other timely hints. There are also good recipes for combining vegetables and directions for cooking those less commonly used.

The reader is asked to follow the government's food guide ("Every Day Eat This Way," 1942 pre-rationing version) but for the rest "use the recipes and you will have good food from there on." In her introductory remarks the author brushes aside the painstaking explanations usually offered by nutritionists with the statement that, "It is not necessary, really, that you puzzle over minerals, vitamins, or any other food terms used so glibly by nutritionists." At the same time, however, she includes a brief description of the dietary factors and requirements in the first chapter for those "with inquiring minds."

TEN WAYS TO KILL AN ORGANIZATION

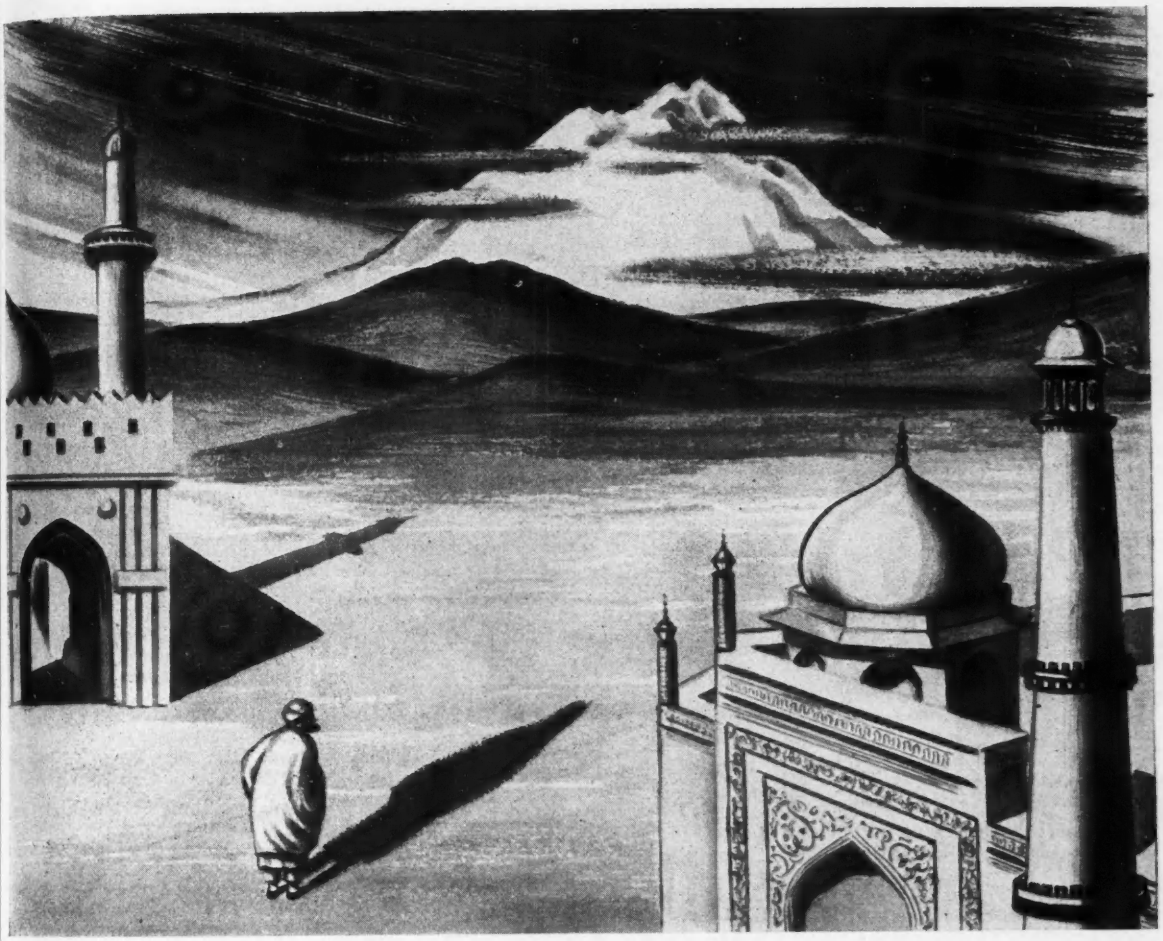
1. Don't come to meeting—but if you do, come late.
2. If the weather doesn't suit you—don't think of coming.
3. When asked to help, "pass the buck" to the officers.
4. If you do not attend meetings, find fault with the work of the members and officers who do attend.
5. Never accept an office. It is easier to criticize than to do things.
6. Nevertheless, get sore if you are not appointed on a committee but if you are, do not attend the meetings or do a thing.
7. If asked by the chairman to give your opinion on some important matter—tell him you have nothing to say. After the meeting tell everyone how things should be run.
8. Do nothing more than is absolutely necessary but when other members roll up their sleeves and willingly and unselfishly use their ability to help matters along, howl that the organization is run by a clique.
9. Don't bother about getting new members, "let Mary do it."
10. Never pay any dues. You always have something for nothing.

—*The Palmetto Leaf, South Carolina Dietetic Association, April 1943.*

MEMORABILIA

Some thirty years ago, traveling over the Northern Pacific Railroad, we were served fresh berry pies in winter. Dining Car Superintendent Hazen Titus said they had a supply of frozen fruits in all their commissaries. The traveling steward, Frank J. Renning, said he got the freezing idea from E. M. Statler when he was chef for him at the Ellicott Square Restaurant in Buffalo, back in the nineties, at a conference he and Steward Louis Rosenbloom had with Mr. Statler. It was then that Mr. Statler suggested the freezing idea and it was put into practice. That started the frosted foods business.

Mr. Statler pioneered with a morning newspaper under the door of every occupied room; running ice water in every room; radio in every room; was the first to employ a dietitian in hotels. The Statler luncheon at the Hotel Pennsylvania that has marked the opening of the National Hotel Show in New York City every year since 1919 is a perpetuation of Statler personality.—*The Hotel Monthly, March 1943.*



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Most important of all, Wyandotte dishwashing compounds are *miserly* with money. Made to operate at top efficiency from first ounce to last, they produce maximum results with a minimum of material.

What's your washing method? If it's by machine, and your water supply is "hard," you'll want the help of *Keego* . . . a wonder-worker at discouraging stains and keeping equipment free from lime-scale deposits. Where water is of average hardness, *G. L. X.* will serve you well. Thorough-rinsing, and especially fine for making glasses shine!

Should your dishes be done by hand, either *H. D. C.* or *G. L. X.* is the answer. *H. D. C.* makes suds, contains soap; *G. L. X.* makes suds, contains *no* soap. Invite your local Wyandotte Man to put any of these speedy compounds through their paces for you today!

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Current Literature

Contributed by Helen Baughman, Janet Engebretsen and Hilda McEwen, Dietary Department, Johns Hopkins Hospital, Baltimore; Quindara Oliver Dodge, School of Home Economics, Simmons College, and Women's Educational and Industrial Union, Boston; and the JOURNAL Staff.

AMERICAN JOURNAL OF DISEASES OF CHILDREN

Vol. 65, April 1943

*Stones in the urinary bladder in children. R. B. Tudor.—p. 591.

Renal Calculi in Children. The usual factors predisposing to formation of calculi in children are the same as in adults, but a dietary deficiency may play even a greater part, judged by incidence in countries where infant feeding is least advanced. Calculus occurs 20 times more often in boys than girls. Dysuria, pyuria, hematuria, and urinary frequency were common complaints in each child suffering from calculi.

AMERICAN JOURNAL OF PUBLIC HEALTH AND THE NATION'S HEALTH

Vol. 33, March 1943

*Nutritional needs of American youth. H. D. Kruse.—p. 249.
*Comparative nutritive value of butter fat and vegetable oils. E. B. Hart.—p. 265.

Vol. 33, April 1943

*Gallup poll tests wartime eating habits.—p. 470.

Nutritional Needs of American Youth. Deficiency diseases have been demonstrated as widespread in previously unrecognized forms: mild acute, mild chronic and severe chronic. Acute and chronic forms may be present together, and time is a factor in the evolution of both but particularly in the latter. The lower the economic level the more frequently, the more severe, and earlier in life chronic processes occur. Malnutrition is a medical problem requiring specific treatment which often must be continued over long periods. Diet must be corrected to supply necessary essentials and to inculcate proper dietary habits and so prevent recurrence. The gravity of slight dietary deficiencies prevailing for years has not been sufficiently emphasized; an adequate diet must be taken routinely day after day to ensure health.

Butter Fat vs. Vegetable Oils. The superiority of butter fat vs. certain vegetable oils for growth rests upon a constitutional difference and is not related to difference in vitamin content. As the sole article of the diet, "filled milk" in which vegetable oil has been substituted for butter fat, based on rat experiments, could result in inferior growth in the infant. No such experiments, however, have been carried out on infants. The burden of proof of equal value must rest with the purveyor of filled milk, and the public should be protected against substitutes for natural milk.

Gallup Poll Tests Wartime Eating Habits. A nationwide survey (*see* p. 312 of this JOURNAL for April) showed that the greatest deficiencies in diet were apparently the citrus fruits and raw greens, eggs, and dairy products.

ARCHIVES OF INTERNAL MEDICINE

Vol. 71, March 1943

*Protective action of vitamin C against experimental hepatic damage. K. H. Beyer.—p. 315.
*Value of sodium chloride in prevention of alkalosis during "Sippy" treatment with calcium carbonate. J. B. Kirsner and W. L. Palmer.—p. 415.

Vol. 71, April 1943

*Effects of vitamin A depletion in young adults. S. Brenner and L. J. Roberts.—p. 474.
*Copper and iron in human blood. V. E. Levine, F. Hill and R. Hughes.—p. 480.

Vitamin C and Hepatic Damage. Guinea-pigs on vitamin C-deficient diets showed an average of 50.3% more liver fat than pigs receiving adequate ascorbic acid, when doses of hepatotoxin were given. Vitamin C, necessary for the production of bile and its pigments, seems to be a factor in hepatic structure and repair. Treatment of hepatic damage by dextrose apparently depends in part upon adequate ascorbic acid in the body.

Alkalosis Prevented by Sodium Chloride. Loss of chloride during Sippy treatment with calcium carbonate frequently causes alkalosis. The therapeutic action of sodium chloride is attributed to chloride replacement or to increased urinary excretion of base bicarbonate. Administration of sodium chloride during Sippy treatment decreased the incidence of alkalosis from 30 to 10%.

Vitamin A Depletion in Young Adults. In 6 subjects on a vitamin A-low diet (67 to 100 U.S.P. units vitamin A daily) for a period of 20 to 31 weeks, studied for defective dark adaptation, macroscopic and microscopic changes in skin and conjunctivas, changes in white blood count and vitamin A content of skin, subclinical signs of deficiency had failed to appear after 7½ months. Either the demand for vitamin A was not great enough to deplete stores, or deficiency signs are not solely the result of uncomplicated vitamin A deficiency. In all subjects carotene content of the blood dropped rapidly at first, but continued to be present in small amounts during the experiment.

Copper and Iron. Copper is essential to hemopoiesis although actually not a part of the hemoglobin molecule; probably it acts as a catalyst. Clinicians generally find copper administration unnecessary in combating anemia, since copper is widely distributed in foods such as liver, oysters, legumes, nuts, and in small quantities in all milk and drinking water. Calcium-phosphorus ratios, infections, diarrheas, and deficiency diseases all interfere with iron absorption. Iron therapy sometimes inexplicably fails in anemia.

ARCHIVES OF PEDIATRICS

Vol. 60, April 1943

*Sydenham's chorea. Review and treatment of 62 cases. J. Schwartzman and L. Grossman.—p. 194.

Chorea and Vitamin Deficiency. Contributory elements cited as responsible for a flare-up of chorea include focal infection, malnutrition and dietary deficiencies, psychic trauma or strain, endocrine dysfunction and eyestrain. In treatment, vitamin B_6, nirvanol and typhoid-paratyphoid therapy, gave the best results in that respective order. It appears possible that a vitamin deficiency, such as B_6, alone or in combination with others, may be one of the most important factors in the etiology of chorea.

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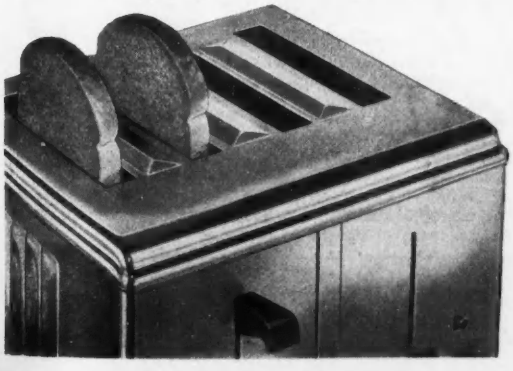

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BRITISH MEDICAL JOURNAL

No. 4291, April 3, 1943

Asthma in childhood. A. Hurst.—p. 403.
Psychological factors in asthma. C. H. Rogerson.—p. 408.
Intravenous alimentation. Editorial.—p. 416.
Vitamins and physical fitness. Editorial.—p. 417.
*Treatment of tetany in pregnancy. Editorial.—p. 418.
*Ketosis and gonadotrophin secretion. Editorial.—p. 419.

No. 4292, April 10, 1943

*On the value of vitamin B_1 in prevention of toxemia of pregnancy. F. J. Browne.—p. 445.
*Is anaemia prevalent? Editorial.—p. 449.

Tetany in Pregnancy. Anderson and Musselman maintain that paraesthesia and "leg cramps" of pregnant women are indications of impending tetany. Brougher believes there may be a relation between preeclamptic toxemia and parathyroid insufficiency. The aim of treatment in tetany is to raise the blood calcium and lower the serum phosphate by calcium gluconate. A low-phosphorus diet is beneficial. Vitamin D was the most effective agent in increasing intestinal absorption of calcium until the discovery of dihydrotachysterol (A.T.10). Tetany is no indication for induction of abortion, as modern therapeutic measures are capable of saving both mother and child.

Ketosis and Gonadotrophin Secretion. A ketogenic diet would stimulate secretion of gonadotrophin and perhaps of other pituitary factors. All pituitary functions are stimulated by ketosis; the capacity of the hypophysis to react when dysfunction is suspected may be tested by placing the patient on a ketogenic diet; and the production of follicle-stimulating gonadotrophin on a commercial scale may be accelerated by application of these findings.

B_1 and Toxemia of Pregnancy. No beneficial effect in the prevention of toxemia of pregnancy was observed when 88 pregnant women were given 3 mg. vitamin B_1 daily.

Anemia. Women working in factories had a higher hemoglobin level (94%) than London nurses and students of the same age (90.6%). The diet of the nurses contained 1662 calories, 47 gm. protein and 9 mg. iron daily, showing that they were not eating their full allowance of rationed and unrationed foods. The anemia was believed due to iron deficiency alone; emphasis should be placed upon optimum diet to promote efficient absorption and utilization of iron.

FOOD RESEARCH

Vol. 8, March-April 1943

*Nutritive value of milk protein. C. H. Whitnah.—p. 89.
*Quantitative determination of vitamin B_1 in navy beans. A. S. Charm and M. H. Brookes.—p. 109.
*Influence of cooking procedure upon retention of vitamins and minerals in vegetables. B. L. Osler, D. Melnick and M. Oser.—p. 115.
*Further studies on the thiamin values of frozen peas. M. L. Fincke, R. Little, E. Redelings and J. Perkins.—p. 123.
*A microscopic study of the physical changes in carrots and potatoes during dehydration. R. M. Reeve.—p. 128.
*Microscopy of the oils and carotene bodies in dehydrated carrots. R. M. Reeve.—p. 137.
*Loss of ascorbic acid during cooking of stored sweet potatoes. F. I. Scoular and D. H. Eakle.—p. 156.

Milk Protein. Milk may be either evaporated, canned and sterilized, or evaporated and irradiated to 270, 540, or 800 I.U. vitamin D per quart, then canned and sterilized, without loss of protein quality as measured by digestibility or biological value. These values did not change in milk stored with formalin or formalin plus superoxol at 5°C. for 2 weeks or at about −15°C. for 3 weeks. Averages of digestibility and biological values were 93.4 and 90.5 for fresh raw milk, 90.9 and 87.8 for experimentally produced evaporated milk, and 91.8 and 89.4 for commercial evaporated milk.

Vitamin B_1 in Navy Beans. Baked navy beans equivalent to .2 gm. dried navy beans contain approximately one Sherman unit or one-half I.U. (1930 standard) vitamin B_1; 100 gm. baked navy beans contain 157 Sherman units or 79 I.U. (1930 standard). This confirms Waterman and Ammerman's (1935) observation that one I.U. (1930 standard) is equal to 2 Sherman units vitamin B_1.

Cooking Vegetables. In the "new-improved" method of cooking, minimal quantities of water were added to the vegetables and the lid closed flush with the pan, steam escaping only through the vent in the lid. Steaming was continued until the vegetables were cooked sufficiently to serve. In both "new-improved" and "old-fashioned" methods of cooking, new aluminum pans were used and at no time were the contents stirred. Four vegetables (peas, potatoes, carrots, and broccoli) representing, respectively, legumes, tubers, roots, leaves, stems, and flowers, were subjected to these two methods of cooking: the one representative of methods in which no attempt is made to retain the essential vitamins and minerals; the other designed to retain these nutrients to a maximal degree. The large losses of vitamins noted following the "old-fashioned" method, averaging 31%, were greatly reduced by the new-improved procedure so that on the average more than 90% of these nutrients was retained. Losses of minerals in either case were not large, averaging 12 and 5%, respectively.

Thiamin in Peas. The thiamin values of fresh and frozen peas, before and after cooking for a short time in a small amount of water, under the experimental conditions detailed, showed no significant differences between fresh and frozen, uncooked and cooked. Environment may affect thiamin values, as peas grown in one place in 1938 contained significantly less thiamin than those grown in the same place the following year. Thiamin values of several varieties ranged from 2.0 mcg. per gram (Laxton's Progress) to 7.1 mcg. per gram (World Record).

Dehydrated Carrots and Potatoes. Case hardening is conditioned by rapidity of evaporation, cell contents, and the thickness of slices or cubes prepared for drying. Blanching of potato causes starch gelation which seals the dehydrated tissues. Incomplete gelation causes lumpiness in the reconstituted product. Forced drying also produces other undesirable effects. Because of more uniform rate of evaporation starch gelation, steam blanching of thin pieces of vegetable is desirable prior to commercial dehydration.

Dehydrated Carrots. Some of the "off" odors of dehydrated carrot are related to oil and carotene oxidation. Preservation of carotene in blanched, dehydrated carrots is partially effective according to amount of carotene dissolved in and coated by oil, and also according to rate at which oils oxidize. Unblanched, dehydrated carrots contain less oil-protected carotene. Blanching causes earlier and more complete liberation of oil, which coats and protects the carotene, because of the greater length of time in which it can occur and also because of greater mobility of substances in the denatured cytoplasm.

Ascorbic Acid in Sweet Potatoes. Eight varieties of sweet potatoes stored from 4 to 6 months at 50°F. contained from 1.1 to 2.75 mg. ascorbic acid per 100 gm. raw potato. The unpeeled sweet potato contained more ascorbic acid than the peeled. Boiled sweet potatoes contained an average of 131% more ascorbic acid than the raw ones of the same variety; candied sweet potatoes increased in ascorbic acid content about 108%. Baking was the only method used which showed destruction of this vitamin.

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

Vol. 122, May 15, 1943

*Hypertensive toxemia of pregnancy: preeclampsia and eclampsia. L. Dexter, S. Weiss, F. W. Haynes and H. S. Sise.—p. 145.

Vol. 122, May 22, 1943

*Some nutritional principles of mass feeding. G. H. Berryman and P. E. Howe.—p. 212.
Human trichinosis following ingestion of bear meat. R. S. Westphal.—p. 227.
*Handbook of nutrition: XIII. Foods of animal origin. H. C. Sherman.—p. 228.
*Growth accelerating protein. Editorial.—p. 232.

HERE'S HELP FOR RATIONING OF BUTTER!

In spite of butter rationing, there's no need to resort to flavorless substitutes in planning menus when you can get such delicious, butter-flavored spread with the famous easy-to-make Knox Spread recipe (*below*).

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(*Patent Applied For*)

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1 envelope Knox Gelatine
¼ cup cold water
1 teaspoonful salt
1 14½-oz. can evaporated milk
1 pound butter

1. Soften gelatine in ¼ cup cold water.
2. Dissolve thoroughly over hot water.
3. Cut butter into small pieces and heat over hot water until soft enough to beat, *but do not melt the butter.*
4. Add dissolved gelatine and salt to the milk (having milk at room temperature). Gradually whip milk into butter with a Dover (or rotary) egg beater or electric mixer until milk does not separate.
5. Add coloring, if desired.
6. Pack in dish or container and place in refrigerator until hard. Keep in refrigerator when not in use.

Important—Knox spread is not suggested for frying, sautéing, or greasing pans.

Note: Fresh milk may be substituted for the evaporated milk, in which case use a pint of milk (preferably the top half of a quart bottle) and soften the gelatine in ¼ cup milk taken from that pint.

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Vol. 122, May 29, 1943

*Handbook of nutrition: XXV. Conditioned malnutrition. N. Jolliffe.—p. 299.

Toxemia of Pregnancy. Approximately 75% of all pregnant patients have easily demonstrable generalized edema rarely of pathologic significance to mother or fetus in the absence of hypertension and albuminuria. Its cause is unknown. More than 90% of previously normal patients have no vascular complications during pregnancy. Approximately 50% of previously hypertensive or albuminuric patients suffer no aggravation of their hypertension or albuminuria during pregnancy regardless of the previous degree of hypertension or albuminuria. Six to 9% of previously normal patients have hypertension or albuminuria in the latter half of pregnancy, a syndrome known as toxemia (preeclampsia or, if coma or convulsions occur, eclampsia). In 50% of previously hypertensive patients toxemia occurred in the latter half of pregnancy. This acute vascular disorder disappears before or soon after delivery, but frequently permanent vascular disease develops subsequently. There are no late effects of toxemia on the fetus. Permanent hypertensive cardiovascular renal disease of the mother occurs in approximately 25% of the toxemias of pregnancy. Post-toxemic hypertension and albuminuria are conditioned more by duration of toxemia during pregnancy than by its severity. Pathologically, the most characteristic and constant lesions are in the kidney (gomerulonephrosis). Liver lesions are inconstant. The etiology of toxemia of pregnancy is unknown, although evidence points to the placenta as being primarily responsible.

Attaining Nutritional Adequacy. A nutritionally complete diet may be obtained in a number of ways. Knowledge of food classes and their approximate nutritional significance is a distinct aid and forms the basis for equivalent substitution of foods. While a single food pattern may be the practical solution of adequate nutrition for the individual, it is quite unnecessary to gage the adequacy of a diet in regimented terms. The intelligent use of foods presupposes a thorough knowledge of what, nutritionally speaking, the food group may be expected to contribute in normal times, as well as its potentialities when logistics or restriction of supply of certain types of food interfere with "the pattern." Our nutritive requirements are for nutrients, not for certain foods as such.

Foods of Animal Origin. Sherman groups foods of animal origin according to "natural relationship" and "in descending order of economic prominence" as follows: 1. Meats, including fish and poultry, which together command about one-fourth of the average American expenditure for food. 2. Milk in its various forms, including cheese, cream and ice cream, representing usually one-tenth to one-eighth of the food budget. 3. Butter and other animal fats, about one-tenth. 4. Eggs, about one-twentieth. 5. Shellfish, which occupy but a small place in the nation's food budget but lend interest to the dietary. Numerical expressions of availability or utilization of meat iron in nutrition are omitted "lest they should confuse instead of clarifying the subject. We know of no reason for doubting the nutritional availability of the other mineral elements of meats and of all the mineral elements of milk and eggs." Lean meats, eggs, milk, cheese, cream and ice cream are all noteworthy sources of riboflavin when taken in the quantities which are normal to typical American dietaries, in which milk and its products will furnish something like one-half of the total riboflavin, and meat and eggs the greater part of the remainder. Foods of animal origin are not such prominent contributors of thiamin as are enriched and whole-grain breadstuffs and cereals. Niacin is qualitatively well established as an antipellagric factor; but the estimates of quantities of niacin contained in foods or concerned in nutrition are as yet very tentative and uncertain, and "it is a mistake (though doubtless one for which we scientists are ourselves responsible) to suppose that niacin bears any such clearcut relation to pellagra as, *e.g.*, ascorbic acid bears to scurvy. On paper, pellagra may have been redefined as nicotinic acid deficiency, but the typical pellagrin actually needs so much more than this one factor that his case is probably not so parallel with that of the blacktongue dog as has often been assumed." It appears probable that both milk and meat contain all the B-vitamins concerned in mammalian nutrition. In practice we look to fruits and vegetables rather than foods of animal origin for our dietary vitamin C. Vitamin D is present in only negligible amounts in meats generally; slightly more in liver, milk, and butter; distinctly more in eggs. There is evidence that some fats of animal origin have special values in nutrition beyond those due to the hitherto well established factors. While the explanation is still a research problem, a few fats, including lard, are superior to many other food fats as shown by growth experiments with young rats.

"While meat, eggs and milk are much alike in the nutritional efficiency of their proteins, yet these are accompanied by other nutrients which in some respects are quite different either in kind or relative amount, with the result that meat and eggs do not assist the body, as does milk, in the maintenance of its alkali reserve and of a favorable intestinal flora, and hygiene of the alimentary tract. Also the larger the proportion in which milk is used as source of animal protein, the better insured is the liberality of calcium intake, which is now known to be more important at all ages than hitherto understood."

Growth-Accelerating Protein. As a result of the increased daily consumption of a diet containing pancreatic protein and its exceptionally high nutritional value, an extremely accelerated growth rate was recorded for pancreas-fed rats. During the first 28 days the control soybean diet led to only a 28-gm. increase in body weight. The pancreatic protein gave a 28-day weight increase 6 times as great, *i.e.* 166 gm. The second best protein (casein) led to a weight increase of 133 gm. during the same length of time, other control proteins occupying intermediary positions. With the present overemphasis on the health-producing and growth-promoting properties of vitamins, proof of equally definite acceleration of growth by the use of certain selected proteins is of basic clinical interest. The nutritional inferiority of soybean protein is particularly suggestive, even though "soybean dwarfism" has thus far been demonstrated only with white rats.

Malnutrition. Jolliffe reviews the conditioning factors which cause deficiency diseases, the possible nonspecificity of certain lesions of malnutrition, and tabulates the gross evidences of such malnutrition and the special examinations for detection of malnutrition. He then lists various illnesses and conditions productive of such deficiencies, grouping these into factors interfering with ingestion, those increasing nutritive requirement, those interfering with absorption, with utilization, and those increasing excretion and destruction of nutrients. He concludes that, "The term malnutrition signifies not a dietary inadequacy but a tissue deficiency of an essential nutrient . . . caused by the failure to ingest an adequate diet." These findings warrant the conclusion that many diseases and some of the therapeutic measures used to combat them interfere with nutrition and are potent factors in the production of deficiency diseases. "It is also an inescapable conclusion that the treatment of malnutrition is in each person an individual medical problem requiring exact diagnosis and therapeutic measures which cannot with safety be left in the hands of nonmedical persons. The physician who does so is dereliet in his duty to his patient."

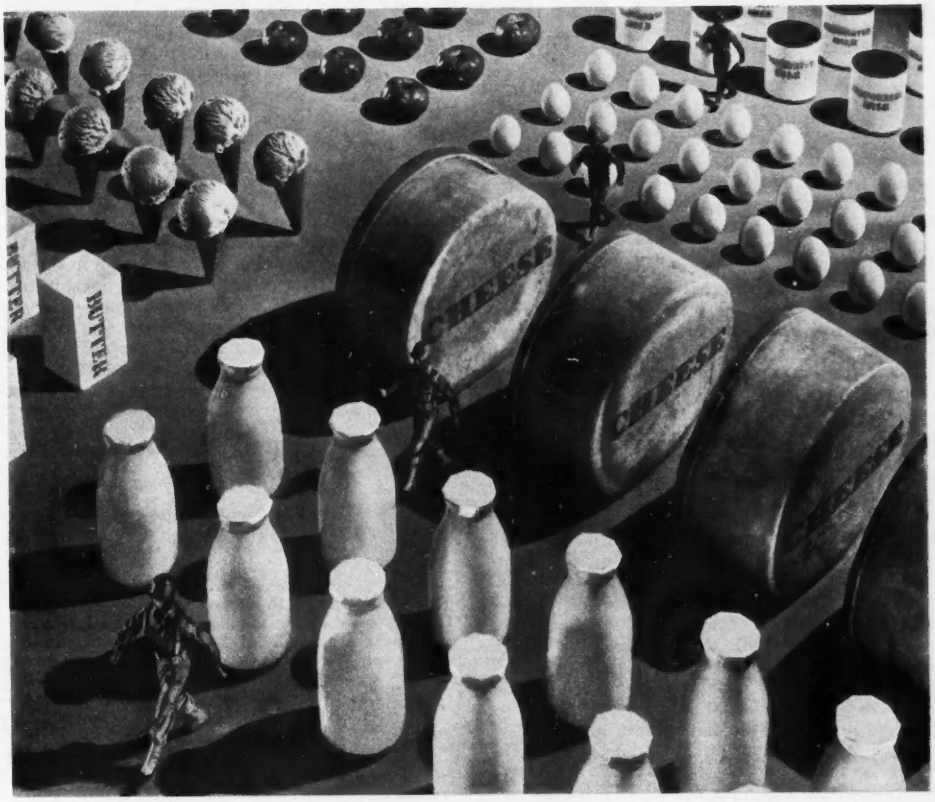
JOURNAL OF BIOLOGICAL CHEMISTRY

Vol. 147, March 1943

*The effect of glucose feeding upon the quantitative relationship between β-hydroxybutyric acid and acetoacetic acid in blood and urine. I. E. Stark and M. Somogyi.—p. 721.

*The effect of insulin upon the quantitative relationship between β-hydroxybutyric acid and acetoacetic acid in blood and urine. I. E. Stark and M. Somogyi.—p. 731.

*Studies in mineral metabolism with the aid of artificial radioactive isotopes. VII. The distribution and excretion, particularly by way of the bile, of iron, cobalt, and manganese. D. M. Greenberg, D. H. Copp and E. M. Cuthbertson.—p. 749.



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Vol. 148, April 1948

*Further experiments on creatine formation in the chick. H. J. Almquist, F. H. Kratzer and E. Mecchi.—p. 17.
*Effect of insulin on pyruvic acid formation in depancreatized dogs. E. Bueding, J. F. Fazekas, H. Herrlich and H. E. Himwich.—p. 97.
The determination of vitamin B_6 (pyridoxine) in foods. A. F. Bina, J. M. Thomas and E. B. Brown.—p. 111.
*Studies on two chemically unidentified water-soluble vitamins necessary for the chick. G. M. Briggs, T. D. Luckey, C. A. Elvehjem and E. B. Hart.—p. 163.
*Metabolic interrelationships of ascorbic and citric acids. H. J. Purinton and C. Schuck.—p. 237.

Distribution of Ketone Bodies. In postabsorptive states the ratio of β-hydroxybutyric acid to acetoacetic acid in blood and urine is independent of the ketonemic level. Glucose feeding elicits the following changes. In the blood of healthy persons, in the state of hunger ketosis, concentration of ketone bodies decreases faster in the plasma than in the corpuscles leading to an inversion of the distribution ratio. The β ratio (100 × β-hydroxybutyric acid)/(total ketone bodies) decreases consistently and drops to zero during the third and fourth hours after glucose feeding, proceeding faster in the plasma than in the corpuscles. The β ratio decreases more rapidly in the urine than in the blood; the β-hydroxybutyric acid completely disappearing about an hour earlier and emerging again at an increasing rate during the third and fourth hours. Diabetic patients whose livers have retained to an appreciable degree the ability to utilize carbohydrate respond to glucose feeding as do healthy individuals, with a difference only in the rate of the process. Those whose livers are unable to utilize appreciable amounts of carbohydrate show no significant changes in the blood.

Insulin and Ketone Bodies. In severe ketosis of diabetic patients glucose feeding has no effect upon the quantitative relationship of ketone bodies in blood and urine. When such patients are enabled to utilize carbohydrate by the injection of insulin, the ketone bodies show changes of the same general nature as those in healthy subjects after glucose feeding. As the ketonemic level decreases, the distribution between corpuscles and plasma shifts in favor of the corpuscles, and the β ratio decreases gradually and consistently. The decrease is faster in the plasma than in the corpuscles. In the urine the β ratio first decreases then increases, as it does in nondiabetic persons. After an initial decrease the β ratio again rises and then drops for a second time, and this wave-like change repeats itself irrespective of the fact that the excretion of total ketone bodies diminishes.

Fe, Co, and Mn Metabolism. Parenterally administered iron is excreted to only a slight degree, being largely retained in the body. Only a trace of labeled iron appeared in the bile and but little more in the fecal contents. The urine is the chief pathway for the excretion of cobalt which when orally administered is only partially absorbed, a large portion passing through the intestinal tract to be eliminated in the feces. Bile is an important but not the sole pathway for the passage of cobalt from the body into the intestinal tract. Considerable amounts of labeled cobalt accumulated in the liver. Manganese is excreted almost totally with the feces—very little in the urine. Bile plays an important role in intestinal excretion of manganese. Orally administered manganese is poorly absorbed even if the animal is in a fasting condition. Manganese in excess of tissue needs may be transmitted to the liver preliminary to its excretion. Manganese injected into the body of a lactating female is transmitted into the milk in small quantities.

Creatine Formation. Creatine given by intravenous injection increased the rate of growth and the muscle creatine content of chicks in a similar manner as when given in a diet deficient in creatine precursors. Dietary deficiency of choline or methionine or both had comparatively slight effect on the muscle creatine content of the chick.

Effect of Insulin on Pyruvic Acid. In contrast to normal animals, injection of glucose into depancreatized dogs does not produce a rise in blood pyruvate. If insulin is administered to depancreatized dogs together with or shortly after injection of glucose, a marked rise in blood pyruvate occurs. A moderate increase in blood pyruvate takes place in depancreatized dogs despite the absence of insulin, if excessively large amounts of glucose are injected. Under these conditions insulin produces a further rise in blood pyruvate. Since insulin does not decrease removal of pyruvic acid in depancreatized dogs, it is concluded that it increases formation of pyruvic acid *in vivo*.

Vitamins in Chick Nutrition. In chicks it is possible to demonstrate the existence of two necessary water-soluble dietary factors in liver and other materials, distinct from folic acid. One, B_{10}, is essential to proper feather development; a second, vitamin B_{11}, is necessary for growth but is not active in producing normal feathers.

Ascorbic and Citric Acids. Investigation of tissue content and excretion of ascorbic and citric acids in the albino rat suggests the existence of an inverse relationship between tissue content and excretion of ascorbic and critric acids. The increase of citric acid in some of the organs and in the urine brought about by feeding certain substances was accompanied by a decrease in ascorbic acid. On the other hand the feeding of ascorbic acid, which was largely excreted, was accompanied by a decrease in citric acid output.

JOURNAL OF NUTRITION

Vol. 25, April 10, 1943

*Vitellin, casein, liver and muscle tissue as sources of phosphorus for the rachitic rat. R. Bunkfeldt and H. Steenbock.—p. 309.
*Nutritional dermatoses in the rat. VIII. Vitamin A deficiency. M. Sullivan and V. J. Evans.—p. 319.
*Nicotinic acid storage in the dog at different dose levels of the vitamin. S. G. Smith, R. Curry and H. Hawfield.—p. 341.
*The availability for human nutrition of the vitamin C in raw cabbage and home-canned tomato juice. M. M. Clayton and R. A. Borden.—p. 349.
*Observations on induced riboflavin deficiency and the riboflavin requirement of man. R. D. Williams, H. L. Mason, P. L. Cusick and R. M. Wilder.—p. 361.
*The effect of high levels of pantothenic acid on reproduction in the rat and the mouse. A. Taylor, D. Pennington and J. Thacker.—p. 389.

Availability of Phosphorus. Studies on availability of phosphorus for calcification of bone in the rachitic rat on a high-calcium diet revealed that phosphorus of ovo-vitellin is present in a different form from that occurring in casein. While it took more than twice as much vitellin phosphorus as inorganic phosphorus at a Ca/P ratio of 3/1 to produce the same degree of calcification, casein phosphorus was found equal in value to inorganic phosphorus under the same experimental conditions. Phosphorus from pork loin was definitely less available than inorganic phosphorus but not to the same degree as vitellin phosphorus. Pork liver and ovo-phospholipid phosphorus approximated inorganic phosphorus in value.

Nutritional Dermatoses. In young rats fed a diet deficient only in vitamin A a deficiency disease resulted, the gross cutaneous signs of which differed from previously accepted descriptions of vitamin A deficiency. Complicating deficiencies of the vitamin B complex, fat and essential fatty acids were responsible for cutaneous alterations which resulted in misrepresentation of the vitamin A deficiency syndrome. This study indicates that diets used hitherto for producing vitamin A deficiency in rats and the current U.S.P. vitamin A assay diet should be revised when an uncomplicated deficiency is the objective.

Nicotinic Acid Storage. Results indicate a limited, but definite storage of nicotinic acid, or one of its physiological derivatives in the body of the dog.

Vitamin C in Cabbage and Tomato. The vitamin C of both raw cabbage and tomato juice was utilized as well, or possibly better than synthetic substance. An average of 116 gm. cabbage or 208 ml. (⅞ cup) tomato juice used provided 50 mg. vitamin C.

Riboflavin Deficiency. Variation in the intake of crystalline riboflavin supplement and determination of excretion of test doses of riboflavin provided evidence that an intake of 0.8 mg. riboflavin per 1000 calories was not associated with

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There has not yet been a time when the serving of toast . . . bread at its delicious best . . . was more important to you . . . and to your Government. The ingenious use of bread . . . made from plentiful cereals . . . to extend the limited supplies of meats and other foods is a patriotic duty, that, *like buying bonds*, brings you profit.

Check your menus to see if you are taking full advantage of the many recipes which will enable you to serve nourishing, satisfying and tasty meals to your patrons within your ration limits.

Here are a couple which may not have occurred to you:

TENDERLOIN TIPS, JARDINIERE: *25 servings* . . . Dice 5 pounds of beef tenderloin tips into ½" pieces. Brown in bacon fat and add 2½ cups diced celery, 2½ cups of diced carrots, 1½ cups of diced onions, ¾ cup tomato catsup. Cover with water and let simmer for 45 minutes. Add 1½ cups fresh green peas and let cook 10 minutes longer. On a slow fire melt ¾ cup butter, add 2¼ cups flour and cook until well browned. Add liquid from the meat and vegetables. Add to the first preparation and let cook 15 minutes longer. Serve on SAVORY TOAST, sprinkle with chopped parsley.

Model PQ . . . gas operated, 540 to 720 slices per hour. All electric toasters also available.

SCRAMBLED EGGS AU GRATIN: *25 servings* . . . Slightly beat 25 eggs, add 1 pound of grated cheese, ¾ tbsp. salt, ½ tsp. pepper, 3 cups of milk. Melt ½ cup of butter in frying pan and turn in egg mixture. Cook slowly until it thickens, stirring constantly and scraping thickened egg from sides and bottom of the pan. Serve on buttered SAVORY TOAST, garnish with finely chopped parsley and sprinkle with cayenne pepper.

These and other suggestions are available to you in printed form . . . on easy-to-file cards. Write us to put your name on our mailing list, and don't forget that Savory Toasters will turn out **better** toast in **larger** quantities, at **lower** cost.

You may now be eligible to purchase one of these efficient units under L-182. Consult your dealer or ask us for details.

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depletion of tissue stores of riboflavin, whereas an intake of 0.35 mg. per 1000 calories definitely was so associated. An intake of 0.5 mg. per 1000 calories appeared to be close to the daily requirement necessary for maintenance of satisfactory tissue stores of riboflavin.

Pantothenic Acid and Reproduction. Where breeding albino rats and mice were maintained on a commercial dog chow with and without a 100 μg. per gm. supplement of calcium pantothenate, 58 control litters averaged 5.4 offspring per litter, and 60 litters produced by animals on the vitamin-enriched diet averaged 6.7 offspring per litter—or an average increase of 24%. Study of brain and heart weights in day-old rats indicated that the calcium pantothenate-supplemented diet was associated with a relatively smaller brain and heart in the offspring.

JOURNAL OF PEDIATRICS

Vol. 22, April 1943

*Prevention of rickets with single massive doses of vitamin D. I. J. Wolf.—p. 396.

Vitamin D Therapy in Rickets. In 75 infants receiving 600,000 U.S.P. units electrically-activated ergosterol (ertron), divided in 2 oral doses in precooked cereal and milk at about 3 to 5 months, mild rickets, observed in some at the onset, healed and remained healed from 2 to 7 months. There is no danger in single massive doses of vitamin D to young infants, even prematures. An infant may be protected for 2 to 3 months by a daily dose of 1000 units, followed by a single dose of 600,000 units, the latter dose repeated 4 to 6 months later. The alternative is to give an infant at 1 to 2 months 50,000 units vitamin D in formula and at 3 months a single dose of 600,000 units in precooked cereal, the latter dose repeated 4 to 6 months later. Vitamin D in single massive doses is stored in the blood plasma for weeks or months. Oral single massive doses are to be preferred to parenteral injection except in cases of severe intestinal disturbance or poor absorption. The single massive dose of vitamin D for prophylaxis of rickets is effective, safe and time-saving.

SCIENCE

Vol. 97, April 30, 1943

*Some obstacles in the path towards an optimum diet. A. J. Carlson.—p. 385.
*Destruction of red blood cells after fat ingestion. V. Johnson, J. Longini and L. W. Freeman.—p. 400.
*Isolation of the antianemia factor (vitamin Bc) in crystalline form from liver. J. J. Pfiffner, S. B. Binkley, E. S. Bloom, R. A. Brown, O. D. Bird, A. D. Emmett, A. G. Hogan and B. L. O'Dell.—p. 405.

Optimum Diet. War, by interference with agriculture and commerce, as well as by destruction of food, brings starvation and hosts of human ailments that sprout on malnutrition. Knowledge of physiology, nutrition and medicine is as yet insufficient to provide a basis on which to outline the components of an optimum diet. We do not know all about optimum soil fertility for production of food of optimum nutrition value. Even an optimum diet cannot push back hereditary limitations. Though our knowledge of foods and nutrition has increased, this has not been made effective in the average home. Many diseases, not primarily of dietary origin, may and do prevent the effect of good diets.

Destruction of Red Blood Cells After Fat Ingestion. Fat ingestion has been shown to increase the fragility of red blood cells. Although the extra blood destruction seems to be insufficient to produce anemia in normal individuals, it remains to be determined whether regeneration of red cells after blood loss might be hastened by a low-fat diet or whether abnormalities in fat absorption or abnormal sensitivity of cells to the hemolytic agent described might contribute to production of human anemias not associated with blood loss.

Antianemia Factor (Vitamin Bc). Under certain dietary conditions chicks fail to grow, and develop severe anemia which can be cured with liver extracts. Recognizing the responsible factor as part of the B complex, the investigators designated it Bc and later succeeded in isolating it in crystalline form. At the same time Mills, Briggs, Elvehjem and Hart described Peterson's "eluate factor" which appears to be identical with vitamin Bc.

FOOD INDUSTRIES

Vol. 15, May 1943

*Multistage dehydration produces better food at lower cost. L. V. Burton.—p. 51.
*Small dehydraters for vegetables. S. G. Davis, W. B. Esselen, Jr., F. P. Griffiths.—p. 54.
Army specifications for dehydrated foods.—p. 58.
*Preserving fruits with SO_2 to aid lend-lease program. J. G. Woodroof and S. R. Cecil.—p. 59.
Concentration citrus juices by the vacuum method. J. L. Heid.—p. 62.
*Research shows how vegetables can be preserved by brining. F. W. Fabian.—p. 65.
*Granular type cheese saves time, labor and equipment. J. C. Marquardt.—p. 69.
*Controlled atmosphere storage helps to keep fruits fresh. D. V. Fisher.—p 70.

Multistage Dehydration. Experience shows that dehydrated vegetables keep 50% longer for each 1% reduction in moisture content at the 5% level. The following changes in the single-stage dehydrater are required to produce this degree of dryness economically: initial dry-bulb temperature may be increased, but at the cost of quality; the number of cars of drying material in a tunnel may be reduced, the amount of material undergoing dehydration in a given piece of equipment may be reduced, or the time of retention in the dryer may be lengthened; the air velocity may be increased; recirculation of any warm moist air may be stopped. Criticism of single-stage dehydration to extremely low moisture content by hot air is not directed against the equipment so much as against the manner in which the equipment is used.

Small Dehydraters. Dehydration is defined as the evaporation of moisture from the product by artificial heat under carefully controlled conditions of temperature, humidity and air flow. Air functions as a carrier for both heat and moisture. Heat energy is required to vaporize moisture and drive it from the cells to the surface of the product. The moisture-carrying capacity of air is directly proportional to relative humidity. A small-scale dehydrater must be simple in design, afford maximum control of factors involved in dehydration, and produce results as quickly and efficiently as possible. Includes detailed instructions for construction of small vegetable dehydrater.

Preserving With SO_2. Fruits to be sent to Britain for use in preserves can be treated with SO_2 solution, saving critical materials. Fruits are freed of foreign matter—stems, caps, peel or pits; washed and drained; placed directly in containers and SO_2 solution added, with or without use of salts as a firming agent. All natural fruit color is bleached in the presence of SO_2, but calcium salts influence rate and amount. Saturation point is reached when SO_2 content of fruit tissue reaches concentration of liquid medium.

Brining Vegetables. It is inadvisable to permit any fermentation in the case of peas which require at least 70° sal. brine (higher is preferable) for preservation. Corn can be preserved at lower brine concentrations than peas, since it ferments much more slowly and apparently is not harmed by fermentation. Green string beans and okra can be preserved with a brine concentration starting at 40° sal. and raised 2° per week to 60°. Fermentation apparently does no harm to beans, but okra loses color. Green Lima beans require a minimum salt concentration of 60° sal., preferably 80°. In general, fermentation causes loss of color. Blanched vegetables ferment more readily than unblanched. Salting does not destroy catalase or peroxidase.

Cheese. A new granular type cheese, very like Cheddar, saves time, labor and equipment. The manufacturing process is detailed.

1932 **1942**

1/2 LB. NET (227 GM.)
PABLUM
A thoroughly cooked and dried palatable mixed cereal food, vitamin and mineral enriched.
Pablum consists of wheatmeal (farina), oatmeal, wheat germ, yellow cornmeal, powdered beef bone specially prepared for human use, sodium chloride, powdered alfalfa leaf, powdered yeast and reduced iron. Pablum is thoroughly cooked under pressure and dried, with resultant rupture of the starch granules and some dextrinization. Pablum contains thiamine (vitamin B1) and riboflavin (vitamin G) from natural sources, nutritionally important minerals (iron, copper, calcium and phosphorus), is readily digested, low in crude fiber, palatable, convenient and economical to prepare.
REQUIRES NO COOKING
Add milk or water, hot or cold.
Serve with milk or cream.
MEAD JOHNSON & CO.
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PABLUM IS ALSO SUPPLIED IN 1 LB. 2 OZ. PACKAGES
1/2 LB. NET (227 GM.)
PABENA
OATMEAL enriched with vitamin and mineral supplements, thoroughly cooked and dried.
Pabena consists of oatmeal, malt syrup, powdered whey, powdered beef bone specially prepared for human use, sodium chloride, powdered yeast, and reduced iron. Pabena furnishes vitamin B complex, including thiamine, and nutritionally important minerals (iron, copper, calcium, and phosphorus). As a result of thorough cooking and drying, Pabena is easily digested; palatable; convenient to prepare; and economical to use.
REQUIRES NO COOKING
Add milk or water, hot or cold.
Serve with milk or cream.
MEAD JOHNSON & CO.
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KEEP IN COOL DRY PLACE
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Council on Foods

8 oz.—1 lb. 2 oz. 8 oz. only

PABLUM, the pioneer precooked fortified infant cereal, now has a companion-product: Pabena is a precooked oatmeal cereal, lending variety to the infant's diet and offering the nutritional and convenient features of Pablum.

BOTH continue to be marketed and advertised only to the medical profession. Samples available on physicians' requests.

MEAD JOHNSON & CO., EVANSVILLE, IND., U.S.A.

Gas Storage. Controlled atmosphere storage helps to keep fruits fresh. When placed in a gastight room, respiration of the fruit depletes oxygen and builds up the desired percentage of CO_2; any excess carbon dioxide is drawn off. Marketable life of apples, particularly certain varieties, is extended, and excellent results obtained with pears but not with stone fruits. The general adaptability of controlled atmospheres in the commercial storage of fruits at present is rather limited.

HOTEL MANAGEMENT

Vol. 43, April 1943

Here's how—care and purchase of uniforms.—p. 19.
*Here's how—make your china and glassware last.—p. 22.
*Here's how—make your heavy duty equipment last.—p. 29.
*Notes for big food buyers.—p. 47.
101 inexpensive meat extenders. S. Mallick.—p. 59.
*Points to consider in planning modern menus.—p. 67.
Budgeting for post-war purchases. E. B. Horwath.—p. 69.
*Here's how—use soap and cleaning agents right! A. G. Mezerik.—p. 91.

China and Glassware. Main causes of breakage are tapping glasses together, prolonged use of hot water, improper loading and operation of cleaning machines, and poorly organized methods of handling and storing. Precautions suggested are: don't stack china too high; store cups in single layers in wood-protected racks or on trays covered with clean towels; wash dishes as soon as possible after soiling; scrape with soft brush or rubber scraper; use soft water in washing and mild, best quality washing powders; copious rinsing is essential; avoid overheating china; china with handles should be stacked with handles away from other china; faucets on sinks should be rubber-capped; mats should be placed on the floor at points where china and glass are most likely to be handled.

Heavy Duty Equipment. To make heavy duty equipment last, have gas company check gas input on units to agree with manufacturer's ratings; clean gas burners frequently and rotate their use; exercise great care in cleaning ranges; do not overload capacity of ovens; when finished with ovens, leave door partly open for thorough drying; never brace an oven open with heavy cooking utensils or your body; be sure metal cleansing solutions used on ovens or ranges won't hurt sheet metal; don't permit sediment to collect in the bottom of fryers; keep steam cookers clean and free from sediment; hot water or steam will do a good cleaning job on steam-jacketed kettles, necessitating only a mild scouring powder a few times each month; grease brass and bronze parts of gas valves periodically to prevent sticking; keep water away from parts of kitchen equipment which touch the floor.

Food Buyers. When buying foods, be sure that moisture content isn't excessive; know what you purchase; bananas at a temperature below 54° start softening; cut, don't break bananas off the bunch; fruit keeps better when wrapped; keep a low inventory to reduce spoilage, theft, and carelessness in handling; baked beans can be kept from souring by covering with water; unpack tender fruits and place in refrigerator on shallow trays to eliminate crushing; wilted asparagus can be salvaged by placing it bottom side down in ½" ice water after trimming ¼" off butts; keep tight covers on spices, coffee, tea, maple syrup, extracts, juices, nuts; keep bottled tomato and fruit juices, bottled extracts, beer, cider, and wines in a dark place. Sea scallops average 110/gal., large native Cape scallops, 500/gal., and medium native Cape scallops 850/gal.; scrod is haddock or cod weighing 2½ lb. or less; finnan haddie is fresh haddock split and smoked; tinker mackerel weigh from ¾ to 1 lb., medium mackerel from 1¼ to 1¾ lb., large mackerel from 1¾ lb. up; chicken lobsters weigh 1 lb., large lobsters from 1¼ to 3 lb., jumbo lobsters 3 lb. or over; medium Cotuit oysters count 700 to 750/barrel, small Cotuit oysters 900 to 950/barrel; cherrystone clams count 1100 to 1200/barrel, little neck clams 2000/barrel. "Fillet of sole" is from flounder; native crab flakes are whole pieces from the claws and native crabmeat is broken pieces from the body.

Menus. In planning menus, have variety of temperature in meals, serve hot foods hot and cold foods cold; strive for contrast so that food is in different shapes, sizes, and textures; food should be well arranged on the plate; be season conscious; ices and sherbets are more profitable than ice cream; fruit juices are less costly than soup; serve food in casserole as it keeps better; costs are low for fruit plates; use salad plates on the main dish listings; prepare foods just before they are eaten and cook in small quantities; see that someone in your organization is alert to new profit dishes.

Cleaning Agents. Gives the type of soap and procedure which is most effective in cleaning beds, public wash-rooms, kitchen food containers, cooking utensils, kitchen machines, refrigerators, steam-tables, chests and other unpainted metals, marble, metals, plumbing fixtures, rugs, shades, tableware, walls, woodwork.

NATION'S SCHOOLS

Vol. 31, April 1943

*Plate lunches in war time. C. C. Hart.—p. 48.

Vol. 31, May 1943

Mr. Food Rationer, please take school lunchrooms out of restaurant classification and oblige Food Service Director's Conference.—p. 54.
*Lunch is class project. L. R. Keller.—p. 55.

Plate Lunches. Successful changes in school lunch menus have been made in the schools of Rochester, New York, under the direction of Constance C. Hart. A meatless day in addition to Friday was maneuvered by offering the most popular meat substitutes and meatless sandwiches on that day. Meat substitutes were popularized by serving in individual casseroles. Meat has been effectively extended by serving smaller portions on plate lunches with increased servings of salads and vegetables. The proportion of vegetables in meat stews has been increased and slightly larger biscuits are served with them. Dishes such as meat shortcake, small sausage cakes between biscuits with cheese sauce, escalloped potatoes combined with sautéd chipped beef, ground ham or finely chopped wieners, thin baked pork chops with stuffing, and croquettes made with small amounts of meat combined with rice, spaghetti or mashed potato and served with a thick sauce have helped. Soybean flour in bread, rolls, and muffins, and generous sprinkling of salads with peanuts support the protein content of the diet on meatless days. Due to butter and cream shortages, more dark-green and yellow-orange vegetables are used on plate lunches as sources of vitamin A. A butter extender is used for table butter. New employees are given a list of suggestions which the manager goes over point by point but constant supervision is necessary to maintain any semblance of standards today. Candy has been removed entirely from the counters resulting in doubled consumption of pie and cake, only one serving of which is allowed per person. Canned and fresh fruits are always available. Apples sell the year round for 1 cent. Receipts are 32½% over last year.

Class Project. The school cafeteria at Boothwyn High School, Boothwyn, Pennsylvania, is operated as a class project. The following duties are performed by the tenth grade girls taking the home economics course: manager, preparation of hot dishes, sandwiches, frankfurters and rolls, soup, salads and dessert, assisting the manager, washing dishes and kettles, and assistance in cafeteria. These duties are carried out in rotation for a period of one week each.

Mothers Can't Neglect VITAMIN D *When Formulae Are Made With* IRRADIATED EVAPORATED MILK

WISCONSIN ALUMNI RESEARCH FOUNDATION
Approved for VITAMIN D upon periodic tests

MOTHERS cooperate *automatically* in your antirachitic regimen when you put babies on *Irradiated* Evaporated Milk.

Regularly as feeding time comes, the infant gets all this milk's normal nourishment *plus Vitamin D.* Neglecting the rickets-preventing factor becomes a practical impossibility!

Enhanced Protection Made Effortless

Irradiated Evaporated Milk provides prophylactic amounts of the calcium mobilizing Vitamin D despite the mother's indifference or forgetfulness. Your assurance of this dependable measure of protection for the children placed in your care has been demonstrated in clinical studies on thousands of infants and growing children.

No change in your regular antirachitic measures is required nor suggested. Irradiation has not increased this milk's low cost.

Depend on this Seal

This Seal or mention of the Foundation's name on Irradiated Evaporated Milk labels guarantee reliable Vitamin D potency. This product is tested periodically in our own laboratories.

Equally zealous of the high quality of this milk and of its uniform Vitamin D value are the Companies producing it under license from the Foundation.

Unrelenting watchfulness from farm to finished product achieves standards of reliability worthy of every physician's complete confidence.

Send For These Valuable Booklets

An extremely valuable booklet "Infant Feeding with Irradiated Evaporated Milk" and our "Nutrition Check-Up Chart" will be mailed promptly. Write for them today.

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News Notes

American Dietetic Association Wartime Conference. Following the custom established by the A.D.A. for meetings held during wartime, this twenty-sixth annual meeting will be essentially a work session concerned primarily with the pressing, all-important problems of present and postwar food and feeding under the chaotic conditions brought about by the war. This will be the fourth national convention of dietitians in wartime (the first in 1917 when the Association was organized, and the second in 1918, which was the first annual session of the Association) when similar critical conditions necessitated the pooling of ideas and information and the formulating of concrete, workable plans and procedures.

Final plans for the conference program which are largely under the direction of Mrs. Katherine M. Johnson, executive director of the Association, are being purposely delayed so that the information when presented will be up to the minute and therefore most helpful to those who attend. This 1943 Wartime Conference of the Association will be held at the Hotel William Penn, Pittsburgh, October 19–22 inclusive.

Convention Chairmen Appointed. The following chairmen, in addition to those announced in the March JOURNAL, have been appointed for the Pittsburgh meeting of the American Dietetic Association, October 19–22: Hospitality, Irene Willson, Shadyside Hospital; Program, Sylvia Levie, Mayview State Hospital, Phyllis Sprague, Pennsylvania State College, and Lillian Hack, St. Christopher's Hospital for Children; Pages and Ushers, Mrs. Ruth Snyder Marshall, Margaret Morrison College; Special Registration, Genevieve Malloy, Montefiore Hospital; Student Registration, Hester Griffin, Mt. Mercy College; Tickets and Meal Reservations, Frances Swenson, Elizabeth Steele Magee Hospital; and Trips, Maxine Schumacher, St. Margaret's Hospital.

A.H.E.A. Workshop Session. A Wartime Institute with 225 delegates representing all state associations was conducted June 18–21 at the University of Maryland. "Strengthening the Home for War and Postwar Living" was the theme of the meeting and speakers from both government and nongovernment agencies as well as specialists in various fields addressed the delegates.

Invalids' Food Needs Under Rationing. According to a release of OWI, USDA, a newly formed committee of physicians and specialists will assist in formulating broad policies for handling the special dietary needs of invalids and persons with specific diseases under the rationing program. The advisory committee, it is said, was named by the National Research Council at the request of FDA and OPA. The special committee is studying procedure for obtaining certification by physicians of invalids and persons with specific diseases requiring extra quantities of rationed foods; qualifications of those who may certify as to these needs for extra foods; procedure of certification which will place a minimum burden on physicians; and diseases justifying extra allowances of rationed foods with specific determination of what foods and what quantities are necessary. Members of the committee, all of whom are physicians, represent the following fields: internal medicine, surgery, obstetrics, pediatrics, dermatology, and metabolism (diabetes).

In this connection the *Food Field Reporter* for May 24 reports that, "Requests for supplemental food rations that are backed by a physician's certificate will henceforth be handled by a health panel which has been appointed to assist OPA officials" and that Marie Krause, dietitian in charge of the nutrition clinic, New York Hospital, acts as an adviser on the just-mentioned health panel.

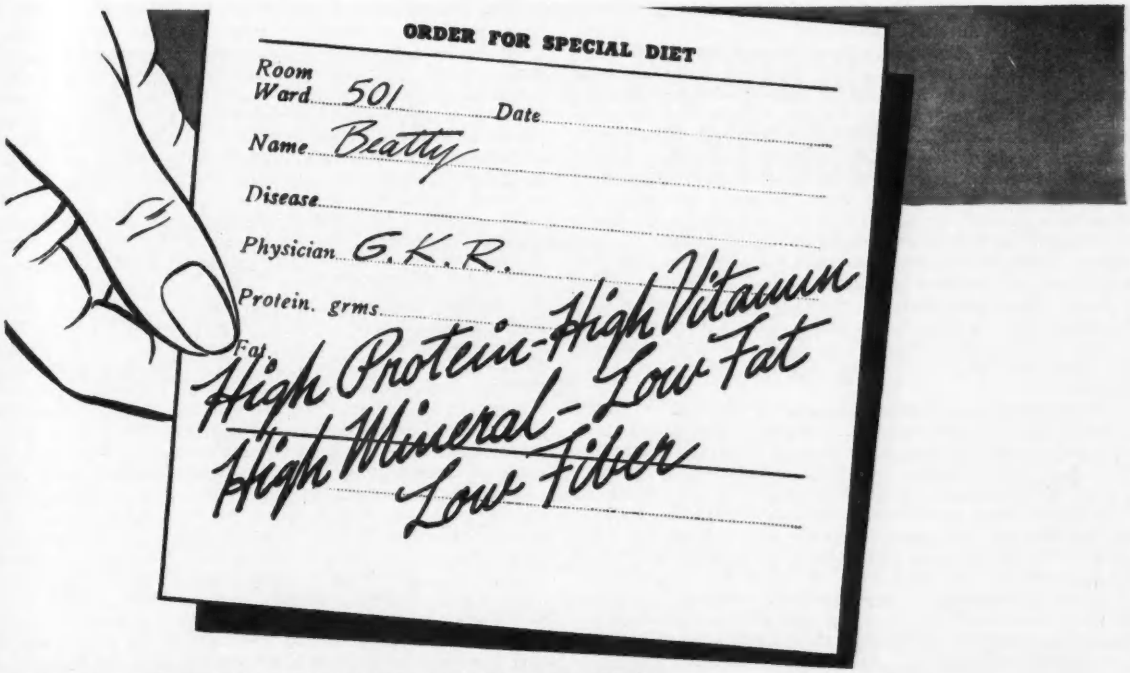
It should be added that groups of dietitians have been concerned with this problem for some time. One of the first was the Cleveland Dietetic Association who early this year under the chairmanship of Helen Mallory, assistant director of dietetics, University Hospitals of Cleveland, worked out a completed plan for evaluation of ration points required for special diets and submitted this to the Cleveland Academy of Medicine. The measure of the plan's value, according to Miss Mallory, is now being determined in Cleveland. Meanwhile, it has been proposed that a committee under the direction of Mrs. Dorothea Fletcher Turner, chairman, Diet Therapy Section, A. D. A., evolve a plan on a similar basis which could be used possibly on a nationwide scale.

The Boston *Daily Globe* for April 23 quotes Frances Stern, chief of the Food Clinic, Boston, as stating, "Diets for diseased persons or those with abnormal physical conditions can, with few exceptions, be had within the limits of present food rationing restrictions. Although extra rations may now be granted by local boards on presentation of a doctor's certificate this should rarely be necessary. . . . Some years ago the principle that the special diet—that needed by the sick person—is but a deviation from the normal diet was set forth by Dr. Ruth Wheeler, a former president of the A. D. A. It came as a sort of revelation, but today thousands of dietitians in the United States are basing their special diets on this principle."

Using Resources to Meet Food Needs is the title of a recent publication of the Bureau of Agricultural Economics, USDA, by Raymond P. Christensen, agricultural economist. T. Swann Harding, senior information specialist, Office of Information, USDA, calls attention of readers of this JOURNAL to this publication as one of the most significant so far issued by the Office of Information. The book contains a wealth of tabular and other information, much of which apparently has not been published before, together with much excellent critical discussion of the problem of meeting increasing wartime needs for food. An improved plan for the use of agricultural resources is presented.

International Food Conference. New York papers for May 31 stated that the Conference had recommended "a 15-point program under which governments could begin now—without waiting for the end of the war—to improve the diet and reinforce the health of their peoples" beginning with the task of increasing food resources, and initiating special measures to improve the diet of pregnant and nursing women, infants and children, adolescents and workers, and others with low incomes; adopt sound nutrition policies and "establish national nutritional organizations if these do not already exist," and exchange information and experience through these national organizations; provide education on nutrition ranging from simple facts about diet to more extensive instruction; and finally "insure that the consumer is not misled as to the content of foods, vitamin products, food extracts and other preparations derived from foodstuffs."

Nutrition Program Material. Through the courtesy of Mrs. Alice H. Smith, nutritionist, Cleveland Health Council, the May 6 *Bulletin* of the Columbus (Ohio) Better Business Bureau, Inc., has been received. Entitled "Fact, Fad, or Fancy," this issue, prepared by Fred C. Hauck, is an attempt to present the facts concerning vitamin concentrates and their use, as



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DIETARY REGIMES

. . . DIETENE'S ACCESSORY FEEDING

Rationing, shortages, high costs . . . wartime conditions complicate planning restricted diets. To insure adequacy and toleration in the diet, we suggest you try Dietene's Accessory Feeding. High in biologically superior protein, vitamins and minerals combined with a low fat and a low fiber content, it is easily digested and readily assimilated. Low cost per feeding enables you to provide adequate essential nutrients while staying within your budget.

Dietene's Accessory Feeding is highly palatable. While usually given as a milk drink, it may also be incorporated in puddings and custards. Many dietitians have found Dietene's Accessory Feeding particularly helpful in preparing mixtures for various types of tube feedings.

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obtained from industrial, public health, and nutrition experts, for the benefit of employers who may be considering their use in business or industry. In popular language such statements as the following are included: "Vitamins—whether concentrates or isolated from natural sources—are not food, nor even substitutes for food. They are catalytic or accelerating agents which aid in assimilating foods into the human body. A vitamin is the spark which sets off the powder, food. But if the particular food (the powder) is not present in the body, the vitamin is generally wasted; likewise if the needed vitamin is absent, the particular food is difficult to assimilate. For example, vitamin D becomes of value only when an adequate supply of calcium and phosphorous (upon which 'D' acts) is also present. Proper benefit from vitamins can be derived only by knowing how and when to use them. For this all-important reason, the average layman—being without such knowledge—is advised not to try to obtain their benefits except under expert guidance."

An interesting monthly publication, entitled *Nutrition News for Nurses*, issued by the Cleveland Health Council nutrition service and the Cuyahoga County General Health District, is sent to all public health nurses in the county. It is a 4-page mimeographed leaflet with hand-drawn illustrations. The March issue covered point rationing, daily guide to good eating, nutritional value of the potato, with recipes, and a list of references to pertinent articles in current bulletins and popular publications; the April issue was devoted to Victory Gardens and the nutritive value of various vegetables. An insert in the latter stated that recently 1000 persons attended "refresher courses" in gardening in the Cleveland area, training themselves as gardening consultants in their communities. "Leader's Guides" and "Gardeners' Guides" were printed and distributed through local stores, and lectures were given at department stores. The following figures are given on the cover of the April issue: a ration book has 576 points, a 25 by 40-foot garden will grow 5250 points' worth of vegetables.

Manual of Industrial Nutrition, the first of a series of pamphlets prepared and distributed by the Nutrition in Industry Division, Nutrition and Food Conservation Branch, FDA, contains a list of nutrition posters, pamphlets, films and radio materials and their sources. Addresses of regional offices of FDA, to which requests for advice and other communications may be directed, and the names of regional industrial nutrition representatives appointed as of April 1, are as follows: Northeast Region, 150 Broadway, New York—Violet Higbee and Dr. H. F. Kilander; Great Lakes Region, 5 South Wabash Avenue, Chicago—Mildred Bonnell; Southern Region, Western Union Building, Atlanta, Georgia; Southwest Region, 425 Wilson Building, Dallas, Texas; Midwest Region, Old Colony Building, Des Moines—M. Elizabeth Jensen; Rocky Mountain Region, 1536 Welton Street, Denver, Colorado—Harriet Anderson; and Pacific Region, 821 Market Street, San Francisco—William E. Broeg. In this first issue also is a full explanation of the organization and functions of the Nutrition in Industry Division.

Some basic considerations for an "in-plant" nutrition program are listed in *Manual of Industrial Nutrition*, including classes and demonstrations conducted by the plant physician or dietitian, dietary advice by a dietitian, and the employment of a dietitian to manage the cafeteria. It is recommended that foods of relatively low nutritional value, such as candy, soft drinks, and highly-milled non-enriched cereal products, should be replaced by foods of greater nutritional value and that the plant management should never divorce itself from responsibility for the quality of meals served and their cost to the employees. Under the heading "Some Special Considerations in Industrial Nutrition" are discussions of nutrition as a factor in the prevention of heat stroke, heat exhaustion, and heat cramps; and the use of polyvitamin preparations. It is stated that "ill effects in men working under conditions of high temperature are least often seen among those who are in good physical condition, who are acclimatized to work in the heat, who eat a good diet, who replace their water loss hour by hour and their salt loss day by day." Wherever possible, it is recommended, foods naturally rich in vitamins, such as yeast, liver, certain fish liver oils, and wheat germ, should be incorporated in the therapy of nutritional diseases along with sufficient amounts of the indicated synthetic vitamins in the treatment of actual vitamin deficiency diseases, subject to the discretion of the plant physician. A few menus and some general suggestions for planning hot and cold lunches are included, pending publication of a pamphlet of master menus for all types of in-plant feeding facilities.

The ODHWS *Nutrition News Letter*. April, contained a list of regional nutrition representatives as of April 1 (addresses of which are the same as for regional offices of FDA listed above) as follows: Northeast Region—Lorna Barber, Rosabel Burch, Martha Rogin; Southern Region—Myra Reagan; Southwest Region— Hazel Bratley, Grace I. Neely; Rocky Mountain Region—Mrs. Agnes E. Vaughn, Mrs. Anne K. Weaver; Pacific Region—Mrs. Isabel Costigan, Helen Walsh, Rae Russell; Midwest Region—Velma Clark, Katherine Helzer; Great Lakes Region—Charles P. Alcorn, Mrs. Gertrude Austin, Mrs. Imogene Cox. New materials described in this *News Letter* include: Food Bar Charts, showing the comparative nutritive value of common foods (available from the Agricultural Extension Service, Columbia, Missouri at $3 per set); a reprint from the February 1 *Booklist* of the American Library Association, in which methods of community organization and teaching techniques as well as nutrition subject matter sources are listed (reprints available free from Information Service, FDA, Washington); and "Fighting Food on the Home Front," a flyer with four sample menus and some alternate dishes, also many suggestions for the use of nonrationed foods (single copies obtainable free from Red Cross Nutrition Council, 325 Groveland Avenue, Minneapolis).

A set of "Food Color Charts," prepared and distributed by M. Winnona Cruise, Stout Institute, Menomonie, Wisconsin is described by the author as having been designed especially for use in nutrition teaching in the classroom, office or shop. The charts are cardboard, 8½ by 13 inches, and show by means of colored bars the contribution of different foods to the average daily requirements, in "shares" of calories, minerals, and vitamins. The set of 20 charts is priced at $2.

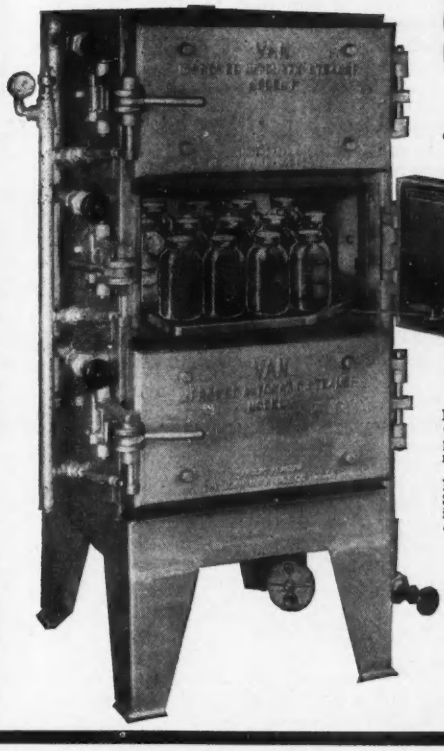
Frances Livingston Hoag, Philadelphia Dairy Council, has announced that a new set of food cards, "Visual Food Values," designed by Miss Hoag for use by teachers of nutrition, homemakers, doctors, nurses, and dietitians, has been published. The set of 128 cards, which have unusually fine, beautifully colored illustrations of various foods, together with scoring tables on which to chart their values in "shares" and an explanatory booklet, is available from the Philadelphia Inter-State Dairy Council, 20th and Race Streets, Philadelphia, at $1.25 postpaid (postage will be charged on shipments outside the United States). The booklet and charts are dedicated to the late Dr. Mary Swartz Rose.

The Philadelphia Inter-State Dairy Council publishes a cook book for children in the first 3 grades, with appropriate illustrations, prepared by Miss Hoag in 1935. A sheet of suggestions to the teacher accompanies it.

Miss Hoag also submitted a sample of a booklet, prepared for the Narberth Woman's Club, which was used as a place card and in which the menu for a luncheon is scored in terms of percentages of daily requirements for minerals and vitamins.

Illustrated booklets on food preservation and storage, published within the last two years by the College of Agriculture, University of Illinois Extension Service in Agriculture and Home Economics, Urbana, include: "Home Canning of Foods for Family Use"; "How to Prepare Fruits and Vegetables for Freezer Storage"; "Preserving Vegetables by Salting"; "Suggestions for Making Pickles"; and "Winter Vegetable Storage."

A release by OWI, dated June 1, called "Score for Victory," in the form of a quiz on the matter of food waste, has been prepared by the Bureau of Human Nutrition and Home Economics, Agricultural Research Administration. Designed especially for the homemaker, this would also be invaluable in institution kitchens if reproduced in larger type and hung in a conspicuous place.



Extra heavy gasket (¾" x ¾") gives extra protection. Four bolts make adjustment easy.

Exclusive John Van Safety Lock makes it impossible to open door while steam is on.

SAVE PRECIOUS POINTS . . . ON RATIONED FOODS

IF YOU HAVE a Van Steamer Cooker you can pack your winter supply of fruits and vegetables while they are plentiful and cheap. Prepare them as you would for range cooking; put them into jars and place on pull-out shelves in compartments.

Steam is automatically turned on by closing the doors and turned off by opening them. 2, 3 and 4 compartments, all independently controlled. Absolute safety assured.

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Behind our Victories is GOOD Food

★ Right now the supreme job is to "keep 'em fighting". Second only to this all-important task is that of improving the health of the Nation.

Non-fat milk solids in your diets makes outstanding nutritional improvements and helps to meet this vital need. Expert testimony, for example, supports the use of at least 6 per cent in bread to provide enrichment factors naturally contributed by milk.

Expanding requirements in the prosecution of the war take a large part of available production of dry milks but reasonable encouragement could bring in more than enough milk from the farms of America to supply all the needs of the armed forces, lend-lease and domestic requirements in full measure.

Here is a challenge worthy of concerted effort.

AMERICAN DRY MILK INSTITUTE, Inc., 221 N. La Salle St., Chicago

National Food Situation. The April bulletin, *Fats and Oils Situation*, Bureau of Agricultural Economics, USDA, stated that production of peanut and soybean oil in 1943 probably will be smaller than anticipated. There has been a record use of peanuts for food and apparently a record utilization of soybeans for feed.

April 15: The *Dairy Situation* predicted that milk production in the second quarter of 1943 would be possibly slightly larger than in the corresponding period last year. Owing to the prospective tight feed situation, however, milk production per cow during the second half of 1943 may be reduced somewhat, bringing about some decline in total milk production. Sufficient stocks of butter and cheese are expected to be accumulated during the current into-storage season to maintain civilian consumption at the present level through 1943. Current consumption of evaporated and fluid milk is at a high level and probably will be smaller after the period of peak production. Civilian ice cream consumption, under the limitation order, is expected to follow the same general seasonal pattern in 1943 as in 1942. Total civilian per capita consumption of dairy products on a butterfat basis in 1943 will be about 10% below last year's record high level but on a nonfat solids basis may be slightly higher than in 1942.

April 19: The *Demand and Price Situation* shows graphically that from the outbreak of war in 1939 until early in 1941 the increased earnings of employed industrial workers represented a "real" gain because living costs, as measured by the Bureau of Labor Statistics index numbers, were not rising. During 2 years (1941–43) living costs rose, but only about half as fast as the wage income per employed industrial worker, permitting a substantial further increase in "real" income.

April 30: Amendment 1 to FDA Order 5 permits packaging of additional quantities of roasted chicory for individual consumer use.

May 1: USDA's May 1 *Cold Storage Report* contained statistics indicating that the only commodities showing increased quantities held in cold storage warehouses and meat packing plants as of May 1 were butter, cheese, eggs, frozen and cured trimmings, and lard. Declines were noted in all other perishable food items, with frozen fruits and frozen and cured pork out-of-storage movement above normal, and reductions in stocks of frozen and cured beef less than normal.

The Bureau of Human Nutrition and Home Economics announced that new jars for home canning should be supplemented from other sources; namely, old, but sound jars of the kinds manufactured for home canning, and certain commercial jars in which mayonnaise, coffee, pickles, and other food products are packed. The latter can be sealed again airtight, and metal disks or other new sealing supplies can be bought to fit. A reusable jar has an opening either $2\frac{5}{8}$ or $2\frac{5}{16}$ inches in diameter. The larger, size 70, is that of a standard Mason jar. The smaller size is a "63." Wartime reclaimed rubber rings should not be tested by stretching, but should be put on carefully, following the manufacturer's directions. Other notes on buying canning equipment, together with illustrations, are contained in the Department's leaflet, *Glass Jars for Home Canning. 1943.*

WFA set the percentage of production that must be held for government purchase during May, June and July at 50% for butter and 70% for Cheddar cheese, compared with 30% for butter and 50% for Cheddar cheese set aside by FDA Orders 2 and 15 in February. It is expected that the new percentages will be decreased sharply from August to November, as production declines seasonally, so that most of the butter and a large part of the cheese produced during the seasonally low production period this fall and winter will be available for civilian use exclusively.

May 4: Amendment 1 to FDA Order 17 requires that, unless specifically exempted, 1943 production of raisin-variety grapes and Zante currant grapes in 8 California counties must be converted into raisins and dried currants, in order to meet increased military, civilian, and Lend-Lease demands.

May 5: OWI announced that the rapid increase in production of edible soya products for war needs since the government launched its expansion program last December is reflected in the March report of purchases for Lend-Lease, Territorial Emergency, Red Cross and other purposes. While a large part of the increased production of soya products is needed for direct war requirements, the expansion program is expected to make available for civilians this year a quantity many times greater than that allowed in 1942, according to FDA.

May 10: Secretary Wickard announced that apple syrup, which USDA developed to make use of off-grade fruit and apple waste, is now in large-scale commercial production. While the tobacco industry is using the syrup to replace glycerin, it is anticipated that wider use in the food field will result from larger production this year.

May 11: WFA and the Dairy Industry Committee urged farmers to put forth every effort to maintain or increase milk production throughout the rest of this year. An 8-point program has been formulated to guide farmers in their efforts.

May 17: WFA tightened reservation and nonstorage provisions on shell eggs to assure availability of sufficient quantities for the armed forces, essential civilian needs, and wartime requirements for dried whole eggs. With few exceptions, dealers, wholesalers, and other distributors may not keep shell eggs in storage after June 15.

May 19: Control of potato shipments from 5 major producing counties in southern Alabama and western Florida was provided by WFA to assist the armed forces in obtaining needed supplies. This action, taken under FDA Order 49, extends to these areas the provisions recently made effective in Maine. WFA sharply reduced the quantities of canned fruits and vegetables canners must set aside from the 1943 production for government requirements, releasing about 7 million cases of canned fruits and juices and 23 million cases of canned vegetables.

Following announcement of dollars-and-cents community ceiling prices, OPA gave district offices power to define the market areas involved, select brands and package sizes for pricing, collect basic cost data, compute retail community prices and issue community price orders. In setting prices, OPA selected brands and package sizes making up about 70% of total sales in the area. OPA has issued a number of new regulations reducing the price of meat and certain other commodities.

May 21: WFA's Baking Powder Industry Food Advisory Committee reports that keeping the "kitchen manpower" fully mobilized on the home front requires readily-available supplies of family-type flour, shortening, baking powder and other essential home cooking and baking ingredients. The Committee cited evidence of a temporary decline in home cooking and baking due apparently to housewives' curtailing of purchases of shortening in order to have more points for meats and butter. WFA has requested the margarine industry to use corn oil as well as soybean oil in manufacturing its product.

May 22: On the basis of prospective 1943 supplies of sugar, WFA announced that the current level of consumption in this country probably can be maintained.

May 24: Rationing of all cheeses (including "soft perishable") and cheese products, except cottage, bakers', and pot cheese, was to be effective in June.

May 26: WPB announced that it has begun allocating materials for production of 125,000 more pressure cookers of types suitable for home canning, making the total produced during 1943 (about 275,000) greater than output of any previous year. Approximately 31,000 were to have been distributed to retailers by June 1, the remainder before the fall canning season. About 20,000 will be of 14-qt. capacity, the others 7-qt. size. A purchase certificate, based on the probable output of canned food, is required, and persons who form groups for home canning will be given first preference. Rationing will be in the hands of county USDA War Boards. Hardware dealers, department stores, or other retail outlets will have information about where applications should be filed. The enameled water-bath canner is not being produced this year because of steel shortages.

More About Fish. According to a communication by

Tempting Variety . . . GOOD NOURISHMENT

. . . these cold cuts are just what they want in warm weather meals

WARM WEATHER SPECIAL
Cool slices of Swift's Premium Leona, Liver Cheese and Cooked Specialty. Served with potato salad and garnish. Choice of beverage—rolls and butter. Dessert.

Summer menus, made delicious with Swift's Premium Table-Ready Meats, have all the advantages. Easy to prepare, economical—they're sure to please patients and staff alike!

Patients are extra fussy nowadays! They want good food that tempts hot-weather appetites; they want variety—and you are trying to be thrifty. What to do about it? Swift's Premium Table-Ready Meats are providing an answer for more and more institutions daily. Here's how!

These wholesome, appetizing ready-to-serve meats give any meal maximum eye and appetite appeal. Yet they hold your time and material costs down; they cut out waste. So satisfying combinations can be easily, quickly prepared.

They provide menus of endless variety, too—for there are over 35 different kinds, all made super-delicious with selected ingredients, home kitchen care.

Of course, these days you can't always get every Swift's Premium variety you ask for. So substitute others. They're all Swift's Premium quality—all delicious!

SWIFT'S PREMIUM *Table-Ready* MEATS

Leona
Braunschweiger
Luncheon Meat
Cooked Tongue

Cooked Specialty
Lunar Loaf
Liver Cheese
Old-fashioned Meat Loaf

Pork Loin
Corned Beef
Savory Loaf

Sandwich Meat
Head Cheese
Souse

Janette Kelley, Lever Brothers Company, Cambridge, in the April bulletin of the Massachusetts Dietetic Association, the U. S. Department of the Interior, in the interest of popularizing certain fish in New England, has appointed a Committee on Increased Utilization of Sea Food Resources, comprised of leading nutritionists, home economists and representatives of the fishing industry. In the past, varieties of fish unfamiliar to New Englanders were either dumped back into the water or shipped to other parts of the country. Now that the ODT is limiting transportation of food from production areas, fish can no longer be shipped more than 500 miles from the coast. Principal objectives of the above-mentioned committee are to increase the supply of little-used fish and make available to the housewife recipes and preparation information. Members of a subcommittee on preparation for the development of recipes and information are: Miss Kelley; Nelle Hord, Simmons College; and Susan Mack, Boston Consolidated Gas Company. Since the first of the year much significant research work has been done on several types of fish, which has shown the savouriness of these fish when properly prepared and their adaptability to table use. Raja, once known as skate, has a texture and grain different from other common fish in that it resembles crabmeat in appearance and eating quality. The flavor is excellent and somewhat similar to that of sea scallops. It can be broiled, pan-fried, served with creole sauce or en casserole and makes an excellent substitute for crabmeat and tunafish in salads and sandwiches. Ocean pout is close-grained, firm, and meaty in texture, similar to flounder. It has an extremely good, rich flavor, and is adaptable to the usual methods of fish cookery, particularly the more simple methods of broiling and pan-frying, and makes an excellent chowder. The roe from roe fish is unlike other fish roes in size and color. Easy to prepare, it contains no waste. One of the simplest methods of serving is to cook over low heat, cutting each roe section in slices, and serve with a well-seasoned cream sauce on toast. It can also be cooked and mashed and combined with seasonings such as chopped onions, dried mustard, lemon juice, salt, pepper, Worcestershire sauce, etc., and used as a sandwich spread or as a canapé sprinkled with paprika.

Hotel Monthly for May contains excellent suggestions for the serving of fish, together with illustrations. Tables of information on fresh water and salt water fish list types of fish and suggested cooking methods. Suggestions for purchasing fish and general directions for frying are also included, as well as a number of recipes.

Pamphlets available through the Office of the Coordinator of Fisheries include: "The Carp: A Valuable Food Resource"; "The Burbot"; "Home Preservation of Fishery Products"; and "Wartime Fish Cookery." These may be obtained from Don Bloch, Consumers Section, Fish and Wildlife Service, Department of Interior, Washington.

The giant king crab of the Bering Sea which before the war supplied a substantial amount of the canned crab which the Japanese sold to the United States, will be canned commercially by Americans this year for the first time, according to Harold L. Ickes, Coordinator of Fisheries. The average male crab, large enough for canning, weighs about 5 pounds and yields 20 to 35% live weight in meat, according to *Victory Bulletin*, May 26, and the quality of the canned product now possible is unsurpassed by crabmeat produced elsewhere. The same publication reports that receipt of tuna at southern California ports for the first 4 months of 1943 more than doubled that during the same period of 1942. The Alaska salmon industry in May began a season which is expected to provide 5,500,000 cases of choice, high-protein food, at least 10% greater than last year.

A bulletin entitled *Seafood—A Wartime Problem*, published by the Magazine Division, OWI, Washington, and presumably available on application, lists some of the moves which have been made officially to improve the situation in the fishing industry, and describes some of the lesser-known fish, such as soupfin shark, sea mussels, Great Lakes smelt, carp, buffalo and suckers, together with suggestions for cooking these.

Food at Food Parley. The following menu, arranged for the opening dinner on May 18 at the Homestead, Hot Springs, Virginia, headquarters of the International Food Conference, will be of interest to dietitians: crabmeat cocktail, Panama; chilled cantaloupe; cream of celery soup, dauphine; consommé madrilene; mushroom omelette; Maine lobster en casserole Newburg; fresh shad roe sauté meunière; broiled spring chicken hôtelière; roast guinea hen with currant jelly; fresh peas à laitue; sliced carrots in butter gauloise; American fried potatoes; new potatoes with parsley; romaine and endive salad Lorenzo; peach pie; orange wine cake à la mode; stewed fresh cherries; pistachio ice cream; Camembert cheese; coffee.

Nutrition in Chile. In a recent letter to the JOURNAL editor, Dr. Julio V. Santa Maria, chief, Dietetic Department, Junta Central de Beneficencia, Santiago de Chile, writes in part as follows: "I have just enjoyed the May issue of your JOURNAL, as I always do, but this time I must also thank you for the nice article by Mrs. Price on the 'Hospital Food Service in Chile.' Mrs. Price has made an accurate summary of Dr. Kemény's paper and of my own article in the same issue of the *Revista de Medicina y Alimentación*. These are but two of the many that have been published in our country on the subject as, since 1933, there is a real interest of the Junta Central de Beneficencia y Asistencia Social (National Hospital Department) in improving hospital diets. It is not easy. We not only lack personnel but especially funds; if I tell you I have to plan the daily menu on a food allowance equal to 10 cents in U. S. currency, you surely will understand that even with the lower cost of food in Chile, we have real difficulty in meeting nutritional requirements. We are doing our best and since 1938 we have been giving a course for dietitians which, while not yet so sound as yours, at least is a first step in arriving at such a goal. I have been visiting training courses for dietitians in Boston schools and I intend to visit the headquarters of the A.D.A. in Chicago where I hope to gain ideas which will improve our teaching."

Enriching Degerminated Hominy Grits and Corn Meal. The April *Palmetto Leaf*, bulletin of the South Carolina Dietetic Association, reported that the act to provide for the addition of thiamin, niacin, and iron to degerminated hominy grits and corn meal had been passed by the South Carolina legislature and would become effective July 1. The entire text of the bill was included. The standard set is as follows: each pound of degerminated hominy grits and corn meal to contain 1.5 to 3.0 mg. thiamin, 16 to 32 mg. niacin or niacin amide, 13 to 26 mg. iron. The Commissioner of the Department of Agriculture of the state is empowered to "change or add to these specifications for ingredients and the amounts thereof as may be required in order to conform to changes in the Federal definition of enriched degerminated hominy grits and enriched corn meal."

University of Illinois Refresher and Radio Courses in Methods of Food Preservation. As reported by Adeline Wood, the refresher course in methods of food preservation, conducted by the Department of Home Economics and Extension Service in Agriculture and Home Economics, University of Illinois, Urbana, May 7-8, was unusually helpful. The program included the following subjects: "Effect of Different Methods of Home Preservation on Nutritive Value and Palatability of Fruits and Vegetables"; "The Pressure Cooker Method of Canning"; "Preservation by Salting and Pickling"; "The Importance of Varieties in Fruits and Vegetables for Preservation"; "Winter Storage of Vegetables"; "Preparation of Fruits and Vegetables for Freezing"; "The Care of Accidents in Community Food Preservation Centers"; and "Procedures for Community Food Preservation Centers." Various types of home-canning equipment were exhibited.

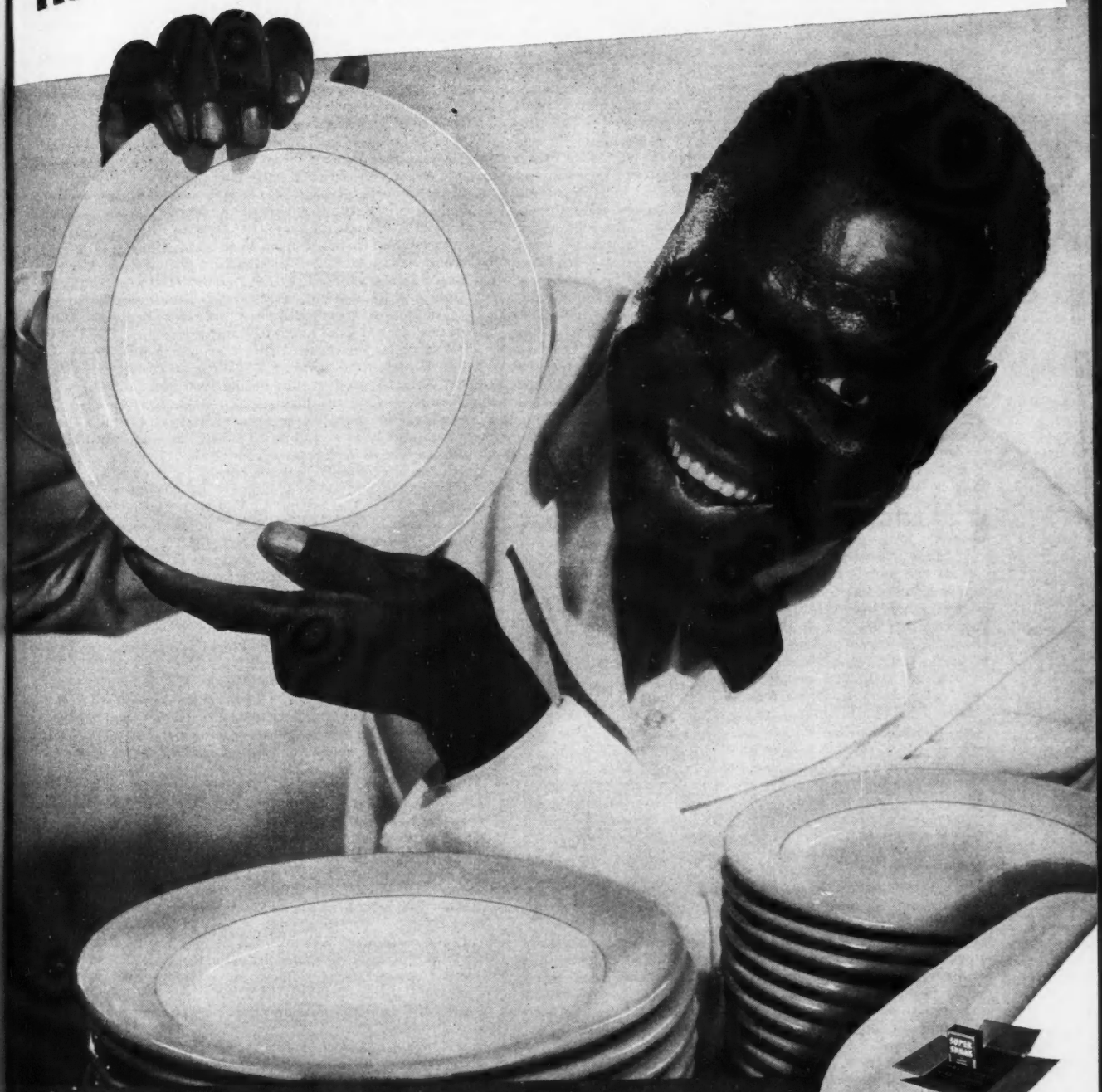
A radio course in approved methods of food preservation was presented over station WILL May 11–June 10 by the Department of Home Economics, University of Illinois. The program included information on the use of the pressure cooker for non-acid vegetables and meats, canning equipment, water bath and oven canning methods for fruits and acid vegetables, home drying of foods, preparation of foods for the storage locker, preserving foods by salting, canning chicken and cockerels, and storage space for processed foods. Bulletins published by the College of Agriculture on which some of the papers presented

Makes dishes "rise 'n shine!"

These dishes "rose" in all their spotlessness right out of a dishwashing machine. A machine primed with Super Soilax—the dishwashing compound that asks no favors from a towel . . . cleans dishes gleaming clean *the first time through!*

Every time, too! Super Soilax Service sees to that. It's the thinking, trouble-shooting half of the crack Super Soilax dishwashing team . . . the team that can't be beat in the game of cleaner dishes at lower cost for *you!*

Learn *more* about it. Write Economics Laboratory, Inc., St. Paul, Minnesota. Representatives and warehouse stocks in all principal cities.



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Control your compound costs, prevent misuse, stop waste—with Super Soilax Control Packages. Also available in bulk.

in the above-mentioned programs were based are listed separately in this section under "Nutrition Program Materials."

Simmons College Courses. The School of Home Economics, Simmons College, announces a one-year graduate program in nutrition, September 20, 1943–June 12, 1944, planned especially to prepare students for nutrition work in public health and social welfare agencies (*see* page 308, April JOURNAL). A one-year program in dietetics is also offered for college graduates, in response to the "urgent need for dietitians to meet both civilian and war needs." According to the descriptive brochure, "Opportunities for service in this field are many and varied. Civilian needs are to be found in hospitals, school lunch programs, commercial restaurants, and college residence and dining halls. Positions directly related to the war effort are those in Army hospitals and in war industries." This program meets the requirements as set up by the A. D. A. and qualifies graduates for hospital internships as well as for immediate placement in positions of responsibility. A summer session is also being conducted June 28–August 13. Additional information regarding all three programs may be secured from the Registrar, Simmons College, The Fenway, Boston.

News From the Food Field. Writing editorially in the *Food Field Reporter*, May 10, Philip H. Van Itallie, nutrition editor, calls attention to the fact that if the dehydrating industry is to continue after the war it must: give the public an opportunity to try its wares now; improve the appearance, palatability, and nutritive qualities of its goods; and reinvest every dollar it can spare in scientific research and advertising. The first condition is partially beyond the control of industry, but the removal of dehydrated soup mixtures from the list of rationed foods is giving the public an opportunity to become acquainted with what the industry has to offer. It is rumored, according to Mr. Van Itallie, that consumers may soon be able to get some dehydrated potatoes, cabbage, carrots, beets, onions, and rutabagas. Elsewhere in the same issue it is stated that 207 firms will be participating in the dehydrating program by the end of the year. A later issue states that 30,000 home-size food dehydraters will be distributed for the use of housewives in southern states.

Mobile Canteen Unit Blueprints. Further information about the mobile canteen unit planned and built under the supervision of the Peoria, Illinois, chapter of the A. R. C., and described on page 39, this JOURNAL for January, has been received from Martha McBride, assistant director, Nutrition Service, Midwestern Area. In planning the unit, Mrs. Irma Gamble, nutrition and canteen chairman of the Peoria chapter, who served as Red Cross dietitian in World War I, was assisted by Naomi McGuire, former manager of Women's Residence Halls, Purdue University. After the plans had been drawn and blueprints made, a local carpenter constructed the unit, which consists of 6 cabinets in which all equipment is stored, at a cost of $500. As the canteen corps worked with this unit, various improvements were made. Complete construction blueprints, together with list of equipment for each cabinet, will be loaned to canteen course instructors through their local Red Cross chapters from Nutrition Service directors in the 4 area offices as follows: Pacific Area—San Francisco, Mrs. Marian Sniffen; North Atlantic Area—New York City, Pauline Murrah; Eastern Area—Alexandria, Virginia, Catherine Leamy; and Midwestern Area—St. Louis, Missouri, Frances MacKinnon.

New Insect Spray. USDA recently reported on the wartime development of an aerosol or fine-fog method of dividing and spreading insecticides that is disastrous to certain insects, especially mosquitoes, flies and many other household insects and greenhouse pests. It is nontoxic to man and animals and noninflammable, but highly toxic to insects—so toxic that it acts with the speed of a gas fumigant.

Dietetic Section, Tri-State Hospital Assembly. At the May 5–7 meeting, Palmer House, Chicago, a Wartime Nutrition Program was presented as follows: "The Physician—Point Rationing and the Therapeutic Diet," Dr. Grant Laing, St. Luke's Hospital, Chicago; "The School," Mrs. Gertrude Austin, regional nutrition adviser, FDA; "The Consumer—Meat Goes to War," Marie Gifford, Armour and Company; "The Institution—Rationing of Food," Mr. Edward F. Stegen, regional rationing executive, OPA; "The Red Cross Worker in Hospital Service," Mrs. Gretchen Crawford, A. R. C.; "Manpower," Mrs. Sidney E. Tarbox, U. S. Civil Service Commission; "Postwar Problems," Nell Clausen, president-elect, A. D. A.; "The Wartime Dietitian," Mrs. Katherine M. Johnson, executive director, A. D. A.; and "How the Rationing of Food Can Be Applied to the Daily Menu," Ella M. Eck, director of dietetics, Billings Memorial Hospital.

Twenty-Fourth Annual Report, State of Illinois Department of Public Welfare. This publication, dated June 30, 1941 and received in May 1943, is of interest to readers of this JOURNAL chiefly because of the 14-page report by Christine Ryman Pensinger, Division of Foods and Textiles. Mrs. Pensinger states that, "It is not necessary to have as many dietitians in a mental or feeble-minded institution as it is in a private hospital where most of the patients are bed patients and where the majority of them are receiving special diets. It is necessary, however, to have an adequate staff to supervise the preparation and serving of all food." She also comments that, with the comparatively low salaries paid to dietitians in state institutions, it is difficult to secure administrative dietitians. The testing kitchen, established in December 1940, the standardization of recipes for all Illinois state institutions, and the canning program are among the subjects covered. Food and labor per meal costs for the year averaged $.063 and $.009, respectively.

1943 Hospital Yearbook. This yearbook, published by the Modern Hospital Publishing Co., Chicago, consists of a directory of hospital products, including food service equipment, and manufacturers' catalogs giving illustrations and descriptions of specific pieces of equipment and information about their availability as of January 1, 1943. Supplemental information appears in each issue of *The Modern Hospital*. In the editorial section of the *Yearbook*, consisting of articles on hospital problems and related subjects, the table of "Recent Figures on Mineral and Vitamin Values of Foods" which appeared in this JOURNAL for July 1942 has been reproduced.

Mabel Flanley, prominent member of the A. D. A. and member of the executive staff of the Institute of Public Relations, Inc., has been elected president of the Advertising Women of New York, Inc.

Appointment of Mrs. Thelma Flanagan. The appointment of Mrs. Flanagan as State Supervisor of School Lunch Programs has been announced by the Florida State Department of Education, Tallahassee.

Hawaii Dietetic Association. Speakers at recent meetings included Dr. Gerald Meniker, who discussed Army rations, and Mrs. Antoinette Faaborg, dietitian at the Kamehameha School for Boys, who later conducted a tour through the school, and also through the Kamehameha School for Girls, now used as a U. S. Army Hospital.

Illinois Dietetic Association. Recent appointments include: Mary Jane Travers, City Hospital, Indianapolis, to Billings Memorial Hospital, Chicago; Doris Anear, Grace Hospital, Detroit, to Wesley Memorial Hospital, Chicago, as administrative dietitian; Mary Gale Sollom, to Presbyterian Hospital, Chicago, working under the direction of Dr. Rollin Woodyatt; Florence Nusbaum, Cook County Hospital, and Doris Vecker and Mary Remington, to Cook County Base Hospital Unit, McClosky Hospital, Temple, Texas; Norma Thor, Illinois Central Hospital, to Children's Hospital, Detroit; Madge Limes and Zella Eckart Kunzel, to Michael Reese Hospital, Chicago; and Mildred Craven, Michael Reese Hospital, to University of Tennessee.

Marie Kilinger has announced her marriage to Mr. John Reidy, Chicago.

Iowa Dietetic Association. At the annual meeting, Des Moines, April 27, held in conjunction with the Iowa Hospital Association and other allied organizations, the program included: "Volunteer War Workers," Mrs. Lucy Mulqueen, Cedar Rapids; "Review of Various Food and Nutrition Programs in Iowa," Dr. P. Mable Nelson, Iowa State College; "Importance of Nutrition in the Management of the Child

Help-Shortage

Eased by simple-to-prepare *Downyflake** MIXES!

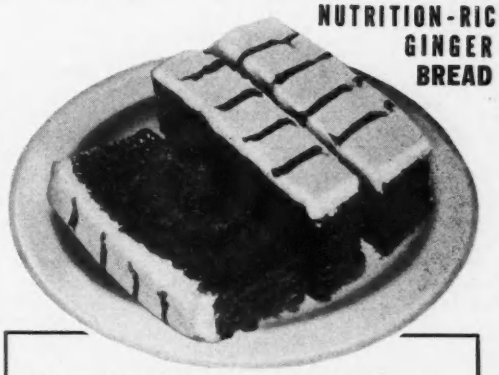
HELP becomes a small problem with *Downyflake* Mixes. They are batters in dry form . . . shortening, egg yolk, powdered skim milk and other quality ingredients already included. Just add water . . . stir . . . bake. The finished, delicious products—in a wide, appetizing variety: ginger cake, bran muffins, biscuits; etc., listed below—equal finest baker's quality.

Results-guaranteed *Downyflake* Mixes cut down waste of food left uneaten because of unpalatability or improper preparation due to inexperienced or hurried help. Accurate control of kitchen budgets is simple. Save time . . . labor . . . cut costs.

Gingerbread Mix—like the rest of the *Downyflake* Mixes—provides extra, important nutritional values in vitamins & minerals (see chart at right). May we suggest you try a sample order from your local jobber?

**formerly FIXT*

NUTRITION-RICH GINGER BREAD



A serving of 100 grams of GINGERBREAD (no icing) will furnish

173 I.U.	Vitamin B_1	107 mg.	Calcium
1.91 mg.	Niacin	203 mg.	Phosphorus
7.68 mg.	Iron	326	Calories

Downyflake

FOOD PRODUCTS

DIVISION OF DOUGHNUT CORPORATION OF AMERICA
393 Seventh Avenue, New York City, New York

Waffle • Biscuit • Egg Pancake • Buckwheat Pancake • Bran Muffin • Corn Muffin (regular or unsweetened)
Gingerbread • Spice Cake • Coffee Cake • Handy Donut • Yellow Cake† • White Cake† • Pie Crust† • Devils Food†
†temporarily discontinued

PINS

WITH

The American Dietetic Association Seal

Gold electro plate/nickel silver	$1.50
Gold electro plate/nickel silver with enamel.	1.75
Silver rolled gold plate, green enameled rim	2.00
Ten karat gold without enamel	5.00
Ten karat gold with enamel	5.25

Plus state and federal tax

Send orders to

The AMERICAN DIETETIC ASSOCIATION

making check payable to L. G. Balfour Company

orders not accompanied by checks will be shipped C.O.D. by the L. G. Balfour Company

Here's Free Help in Planning

Allergy Diets

★ Wheat-Free
★ Milk-Free
★ Egg-Free

To help you in preparing trial diets, we have prepared an interesting booklet showing foods allowed, foods proscribed, and over 50 recipes. Sent free to dietitians on request. Write for your copy.

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Use Them in Trial Diets

FREE DIET BOOKLET
CHICAGO DIETETIC SUPPLY HOUSE, INC.
1750 W. Van Buren St., Chicago, Ill.

Send me the free "C-D" Allergy Booklet showing recipes and food lists.

Name _____

Address _____

City _____ *State* _____

With Diabetes or Rheumatic Fever," Dr. Jackson, Children's Hospital, Iowa City.

The following officers were elected: president, Dr. Margaret Ohlson, Iowa State College; president-elect, L. Beata Reager, State Hospital, Cherokee; vice-president, Juanita Kenefick, University Hospitals, Iowa City; treasurer, Edith Hayward, St. Luke's Hospital, Cedar Rapids; secretary, Gwendolyn Scharfenberg, Lutheran Hospital, Fort Dodge.

Kay Louise Johnson, Evangelical Deaconess Hospital, is now in Army service at Camp Carson, Colorado. Elizabeth Emmons, who resigned her position at University Hospital to enter Army service, will be replaced by Mrs. Eleanor Bowman Berryhill.

Massachusetts Dietetic Association. According to the April bulletin of the association, the paper presented by Mrs. Quindara Oliver Dodge at the Massachusetts Safety Conference in March, entitled "Food for Production," appeared in the May issue of *Journal of Industrial Medicine*.

During 1942–43 members of the Professional Education Committee sent 325 letters to supervisors and teachers of household arts and vocational counselors in Massachusetts and to selected junior colleges. The need for dietitians was stressed, the bulletin "Dietetics as a Profession" was submitted, and in certain cases a speaker was offered. As a result, 38 bulletins were requested and 9 schools requested a speaker. The Greater Boston Vocational Guidance Association invited a representative to explain the work and necessary qualifications of the dietitian to a group of 150 counselors at a May conference. Members of the committee were Dr. Elda Robb, May Foley, and Engla Anderson.

Among those who worked on the revision of the War Emergency Guide, published by the Massachusetts Committee on Public Safety, Division of Health and Social Services in cooperation with the War Services Division, were: May Foley, Mrs. Dorothy Duckles Hudson, and Ruth White. The guide is an outline of 6 lessons, with demonstrations.

Mr. and Mrs. Stanley Friedman (Sylvia Corenblum) announce the birth of a son, born May 5 at Beth Israel Hospital, Boston.

Minnesota Dietetic Association. Within the state there are now three affiliated groups, the Twin City, the Rochester, and the Duluth Dietetic Associations. Speakers at recent meetings have included Mrs. Russell M. Wilder; Gertrude Thomas, dietitian, University Hospital; Dr. W. A. O'Brien, director, Postgraduate Medical Education, and professor, Preventive Medicine and Public Health, who discussed "Nutrition in Time of War"; Irene Netz, nutritionist, State Bureau of Health; Dr. Richard Varco; Mr. O. A. Gaumitz, OPA, who spoke on "Food Rations and Price Control"; Margaret Running, Miller Hospital, St. Paul; Harriet Warmington, Veterans Administration, St. Paul; Adelaide Jury, General Hospital, Minneapolis; and Dr. Lela Booher, chief nutritionist, General Mills, who spoke on "Vitamin Research in a Children's Hospital."

Many Minnesota dietitians are now in the armed forces, and more are enlisting each month. Angeline Mannick, Doris Muske, and Jean Finkenbinder are with Base Hospital 26 in North Africa; Lt. Vivian Ory is at Camp Cook; Ensign Lucille Clark is with the Waves; Lt. Lundeen is stationed at Lincoln, Nebraska; and Lt. Malvina Larson at Ft. Snelling, Minnesota.

Wisconsin Dietetic Association. The annual meeting was conducted as a wartime nutrition conference, Milwaukee, May 22. The morning program included Dr. Helen Hunscher, "Training the Dietitian for Broader Service"; Helen Hoome, "Relation of Food Therapy to Mental Hygiene"; a forum on "The Practical Application of the Science of Nutrition" in which Ella Liner Lambert, Susan F. West, Mrs. Breta L. Griem, Nell Clausen, and Ada Lothe took part. The afternoon program included a symposium on "Organizing Your Community for a Nutrition Program" with the following speakers: Margaret Sharp, Mrs. Griem, Lucille Billington, Mrs. Gertrude Austin, Teresa McDonough, Ethel Keating, and Ruth Dietz. Presiding officers were Mrs. Sarah Ellen Wenger and Hedwig Poehler. Luncheon speakers were Mr. Charles P. Alcorn, USDA, "Nutrition in Industry," and Major Carl Hilker, QMC, "Dehydrated Foods."

Teaching New Employees. An article in the May *Hotel Monthly* by Professor B. R. Proulx, head of the courses in hotel administration, Michigan State College, describes the plan that has been in operation in 5 Detroit hotels since the first of the year for training department heads to teach new employees. Courses were started at the suggestion of the Detroit Hotel Association. An outline of the course, which consists of five 2-hour conferences, is given, together with illustrations showing how teaching techniques are demonstrated. Advantages of this method of training employees are listed. (Single copies are available at 30 cents each on application to John Willy, Inc., 950 Merchandize Mart, Chicago.)

Encyclopedia of Gastronomy. Compiled under the direction of Andre L. Simon, Wine and Food Society of London, England, this encyclopedia, to be published in 9 volumes, is completed to Volume IV, according to the *Hotel Monthly* for May. The 9 volumes will cover: sauces, fish, vegetables, cereals, fruit, birds and their eggs, meat, wines and spirits, concluding with a supplement and analytical cross index to all sections. The description of the contents of the fourth volume is probably indicative of the type of information included in other volumes: "Comprising an alphabetical list of cereals, grasses, plants and trees, the seeds, roots, fruits or pith of which are made into flour, meal or paste for human consumption; together with the descriptions of various flours and meals, and a number of recipes, both old and new, for the making of bread, biscuits and cakes, macaroni, noodles and spaghetti; pastry and pastries, etc.; also an analytical table of contents." This volume retails in the United States for $2.50.

National Restaurant Association News. The May 19 *News Letter* of the association is devoted to advertising copy and layout for restaurants, including cooperative advertisements by groups of restaurants for the purpose of improving public relationships. One example given is an advertisement stressing the amount of butter that can be saved "if a hundred million Americans save just one pat a day," etc., prepared by a leading advertising agency. Full page mats of this and other ads are available, according to the *News Letter*.

News From Our Advertisers and Exhibitors. "Evaporated Milk and Wartime Food Requirements" is the title of a booklet published by the *Evaporated Milk Association* which gives facts about the cost and consumption of evaporated milk in this country, its use as "cream" and as a "butter stretcher," increasing the milk supply, and use of evaporated milk by the armed forces.

The *Cleveland Range Company*, 3333 Lakeside Avenue, Cleveland, has prepared for distribution an excellent descriptive folder entitled "Canning With Steam-Chef." So far as was known at the time of preparation this is the first publication dealing with the use of commercial steam cookers for canning and it is felt that the bulletin will fill a long felt need. Much of the information contained in the circular was obtained through experimental canning with the well-known "Steam-Chef," correlated with the findings of bacteriological authorities. The circular presents the method and a complete time chart for processing various vegetables, fruits and berries, describes the operation with different types of steamer, and includes details on food spoilage.